Baseline Survey of Extension Phase
USAID- DRDF Dairy Project

Draft Report

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Prepared By

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List of Acryonms

AI	Artificial Insemination
AIT	Artificial Insemination Technicians
CNIC	Computerized National Identity Card
DRDF	Dairy and Rural Development Foundation
FS	Field Supervisor
M&E	Monitoring and Evaluation
NGOs	Non-Governmental Organization
NIC	National Identity Card
PKR	Pakistani Rupees
Rs	Rupees
SPSS	Statistical Package for Social Sciences
SRS	Simple Random Sampling
TORs	Terms of Reference
TV	Television
USAID	United States Agency for International Development
UVAS	University of Veterinary and Animal Sciences
WLEW	Women Livestock Extension Workers

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0. EXECUTIVE SUMARY

The executive summary is given primarily for a short insight on the dairy project and its potential target population for the phase II extension of the project. The project summary only touches some of the basic indicators and also thee relevant necessary link to the upcoming project plans. For details on all the relevant factors taken into consideration of the baseline survey please see the section summaries and ***detailed tables in the subsequent chapters. The sample of a total of 984 population size was taken which includes 633 farmers, 182 potential AIT's and 169 potential Women Live Stock Extension workers in six district f Punjab as follows,***

a) Bahawalpur
b) Lodhran
c) Khanewal
d) Multan
e) Muzaffargarh
f) Vehari

Pakistan with current estimates is the 4th largest milk producing country in the world with 3 billion liters of milk produced annually. The potential is huge but the sector operates mostly in the informal economy and needs a consistent effort to formalize and be able to contribute better to the national economy, particularly in the rural context. Out of the total milk produced, 97% is in the informal sector (i.e loose milk consumed in the villages and or sold in the cities through "Gawalas" in unhygienic conditions and without and quality standards. There are 8 million farming households in Pakistan and an estimated number of over 50 million animals. 97% of these farmers are not linked to formal sector thus not progressing in economic terms. The dairy farming practices are mostly old and traditional, with lack of modern farming knowledge to the farmers, lack of good breeding practices, lack of good animal health of nutrition practices and most importantly the rural household women who forms the basic free workforce of handling livestock at home are without any training and or economic benefits.

The public, private, industrial and international development sector has been active in improving the potential of the dairy and livestock sector in Pakistan and where USAID has been highly instrumental in supporting projects for bringing in a positive change in people's lives, and the Dairy project has been highly successful in doing so of thousands of farmers, Artificial Insemination technicians and Women Livestock Extension Workers- Thee project in phase-1 has completed its project cycle (2011-2014), please see www.dairyproject.org.pk for details.

The project due to good success and improving livestock situation and people's lives, have entered into an extension phase from October 2014- October 2016.

The baseline of the project was targeted in the following districts of Punjab.

0.1 Challenges faced during the survey

The baseline survey teams were mobilized in May 2015, but due to the season of wheat harvest and followed by the month of Ramazan, the availability of target population for interview survey became difficult and the process went slow. Few of the respondents did not appear/ not available at the time locked for survey, and some minor percentage, especially WLEW's did not engage with the survey due to social and other reasons. Never the less, the efforts of the survey teams finally completed the assigned tasks and the base line report was completed- In order to ensure connectivity of the target population/ assessment with the project field operations, the raw data and list of target groups was shared with the Dairy project team in advance for project engagement in time. The data collected and tabulated is 95% correct and verified where as 5% error margin exists due to outliers or due to not so

correct understanding of the question by the respondents. More over the data collected is 98% through direct engagement/ interaction with the target group/ respondents, with 2% tertiary information (co-worker, other family member, telephone and neighborhood).

0.2 Women Livestock Extension Workers (potential to be)

1. A large majority (89 %) of WLEW have completed at least 8 years of schooling
2. 31% High school or above with 11% graduates
3. The total average household income is Rs. 17546/- . Where the main source of household income is agriculture which contributes 39 % of the total household income. Dairy and Livestock's contribution to monthly income is at an average 18 % each. (Where the potential WLEW's are engaged as free work force at the household level, without any social or direct economic impact (and if engaged in dairy project activities) can enhance dairy and livestock related income and also their social status in rural household context.
4. More than 45 % of the respondents have basic knowledge and 34% have moderate knowledge about animal husbandry: (this is primarily derived out their traditional knowledge and some/ occasional interaction with local vets and or few other tertiary information of livestock programs (either by the government and or other institutions) but by far large gaps of knowledge was revealed.
5. Average age of WLEWs is 27.2 years with 54 .2% of WLEWs between 20 to 30 years of age group. About one-fifth of the WLEWs are of 20 years of age or below.
6. The Dairy Project during phase I of the project trained and UVAS certified 5,015 women enabling them provide basic veterinary services at the village level. Under the current phase II of the project a batch of 1,000 Women Livestock Extension Workers (WLEWs) will be trained and 1,000 WLEWs will be re-trained which is expected to raise the average income of WLEWs from PKR 1,500 to around PKR 2,500 ($25) on a monthly basis.

0.3 Artificial Insemination Technicians (Potential to be)

a. In general there is huge gap in the cattle breeding sector. The livestock farmers have general know how on the basis of either traditional knowledge of indigenous breeds and or some knowledge of imported breeds or high yielding cross breed. This information is mainly due to local companies advertising sales of animal semen and also partly hit and trail. Although there have been projects by public and private sector to preserve high quality local breeds and also promoting and tagging imported breeds- But given a very large farmers and animal population the overall coverage of "Book logged" , "tested" and "tagged" breeding process is still not in practice.

b. There is an estimated requirement gap of around 8,000 Artificial Insemination Technicians (AITs) in Punjab. The Dairy Project intended to intervene in this much demanding area and therefore trained and got certified 2,032 AITs during the first phase of the project. These self-employed AITs are now earning an average of Rs.7, 027 ($70) per month against the project target of PKR 3, 000 per month. Keeping in view the success and the demand of the technicians, the project further plans to train 1,000 AITs in the extension phase of the project.

c. About 90 % of potential insemination technicians (AIT's) have completed high school or above. Out of the total there are about 13 % of AITs who are graduates or above and about 11 % have education up to middle level. None of the respondents were below middle level of education. Less than half (47 %) of the respondents are married

d. The average monthly household income is Rs 21,173. The main source of this income is agriculture (Rs. 10,383) followed by dairy (Rs. 4,434) and livestock (Rs.

3,359). Households also earn some income from non-agricultural sources (Rs. 2,581).

e. .About 65 % of potential AITs have basic and 25 % have moderate to high level of knowledge about natural matting. However, there are about 10 % of AITs who reported no knowledge about natural matting.

f. Overall, 63 % of the AITs reported basic level of knowledge of Artificial insemination, 23 % possessed moderate to high knowledge, 15% of the AITs did not have any knowledge regarding AI. Majority of the AITs do have some knowledge of local and imported semen. About 15 % and 13 % of the AITs do not have any knowledge about Local as well as imported semen respectively.

g. There is no income directly for insemination abusiveness, and none of the respondent ever received training in livelihood. However all the respondents were aware of the potential of AI and could relate the AIT potential around their villages.

0.4 Farmers

i. Almost 70 % of the rural households are involved in milk production, yet the prevalence of best and modern farm practices is negligible amongst the majority of small producers. These best practices are easy and cost effective to implement resulting in increased yield of up to 15 % productivity

ii. Almost one in four respondents have never been to school, 14% completed primary level, 43 % completed middle or high school and a few (8 %) completed at least graduation

iii. More than 94 % of respondents own livestock and 80 % reported ownership of Land or real estate

iv. The average monthly household income is Rs 24,520. The main source of household income is agriculture (Rs. 11,583) followed by dairy (Rs. 5,014) and livestock (Rs. 4,084). The amount of income a household receives from non-agricultural sources is Rs. 3,839. On average, per capita monthly income is Rs. 4,262

v. Overall, 60 % of the farmers own pure breed (Sahiwal/ Cholistan) farm animals, 54 % own local breed and 25 % own cross bred (European) farm animals

vi. About 79 % of the farmers know animals' nutrition requirements. The basic health/vaccination service providers for farm animals available to farmers are; a local trained person (44 %) and farmers themselves (31 %). Proper basic health/vaccination services are only available to 7% of the surveyed population

vii. The most important reason mentioned for not using all types of best farm practices is that these practices are too expensive. The second most important reason is that 'not enough information' is available about these farm practices. Few farmers also mentioned that they did not have enough time to use these farm practices

viii. The diary project trained approximately 9,000 farmers on best practices in the first phase of the project. Around 85% of the farmers adopted at least one best practice which resulted in increased productivity and income to the tune of 19 % in average milk yield and about $60 per farmer per month.

ix. The Dairy Project in its extension phase will upgrade 100 commercially viable dairy farms to become "Model Farms". The up gradation will be on cost share basis, under a pre-negotiated agreement giving free access to local farmers' communities to farm and its training services. The project plans to set up such farms in 100 villages; where dairy producers from surrounding 6-10 villages will be given one-day training on the basic dairy farm practices. The database of beneficiaries will be maintained for updates and information dissemination. Project's pilot activity in the previous phase has provided credence to this approach.

1. INTRODUCTION & BACKGROUND

The dairy and livestock sector contributes around 11 % to the Gross Domestic Product of Pakistan. There are 7 million farming families and 67 million cattle and buffaloes in Pakistan. More than half of the dairy farmers live in the Punjab province, however, most of these farmers do not follow best dairy farming or breeding practices. Moreover, a few farmers have access to veterinary and breed improvement services. Lack of livestock related businesses only exacerbates the situation. As a result, milk yields are abysmally low in Pakistan and livestock holding has not become a source of prosperity for most of the farmers despite its huge potential for being so.

DRDF, in collaboration with the United States Agency for International Development ("USAID"), is undertaking a Dairy Project in order to foster sustainable increase in dairy and livestock productivity through adoption of best farming practices, breed improvement, availability of timely extension services and promotion of livestock.

In this context, USAID-DRDF Dairy Project was conceived to fill the above gaps by;

- Organizing the rural dairy farming in communities.
- Training unemployed rural women and men in livestock services to improve access to breeding and health services; along with generating self-employment opportunities.
- Raising Awareness Amongst and Training Rural Dairy Producing Households in Farming Best Practices to improve milk productivity through better management of livestock and input resources and to inspire them to utilize needed livestock breeding and health services.
- To enable this activity to be sustainable beyond the funded life of the project by building the capacity of the Dairy and Rural Development Foundation to introduce and maintain rural businesses to improve the access of dairy households to inputs and continued technical guidance.

The Dairy Project's first phase ran from 2011-2014. The extension phase will now run from October 2014 – October 2016.

The project has following four components:

1. Training and support for dairy farmers.
2. Training and support for Artificial Insemination Technicians (AITs).
3. Training and support for Women Livestock Extension Workers (WLEWs).
4. Awareness Campaign.

In order to achieve the objectives, DRDF called for proposals to ascertain the impact of the Dairy Project, its various activities and training programs etc. on dairy rural household in general and on the trainees, farmers and cattle in particular, through conducting a Baseline and End line Surveys from independent third party evaluators.

M/S Sustainable Solutions (SSPL) (Pvt.) Ltd were selected as the evaluators, along with SSPL's panel consultant Mr. Syed Fakhar Ahmed (HRSG), who was the original author of the USAID/ DRDF dairy project to conduct the desired Baseline and End line Surveys. This report describes the baseline of the project and is prepared as part of the baseline study.

2. OBJECTIVE & SCOPE OF WORK

The objective and scope of work for this assignment is as follows:

2.1 Objective

The main objective of this study is to establish a baseline for the extension phase and to measure the impact of the Dairy Project on various targeted aspects of the Dairy Rural Households/Farms through a performance evaluation.

The targeted areas that were covered under the study are:

- Farm Productivity and efficiency : Milk Yield / Animal, Profitability, Milking Animals as a %age of Total Animals Milk Quality and Price Yield, Livestock Growth, Land Usage
- Sustainable availability of services: Extension, Quality Artificial Insemination, Diseases Diagnosis and Treatment.
- Access to Inputs: Product Portfolio and Cost, quality of inputs, Usage.
- Market Access: Supply Chain steps to market of milk, livestock and meat.
- Employment opportunities for rural youth: Artificial Insemination, Health Provision, Herd Management.
- Women Empowerment: Social Interaction and Respect, say in household affairs.
- Community Engagement: Collective Self Extension and knowledge propagation, collective buying on scale, self-managed and arranged follow up gatherings, collective decision making and problem solving.

2.2 Scope of Work

The scope of work included background literature review in order to better understand the project, conducting interview with the relevant project staff for in depth understanding of activities, designing baseline and end line methodologies, preparation for conduct of surveys, training of field team and pretesting of tools and instruments, conducting survey for the collection of data, analyzing the survey results and preparation of assignment report. The detailed TORs of the assignment are attached as **Annex 1**.

3. Methodology

Following methodology was adopted for the study:

3.1 Desk Review

In order to get an in depth understanding of the project following material related to the project was reviewed:

- Program Description as given in the Cooperative Agreement
- Annual Implementation Plan
- Project's Progress Reports
- Monitoring and Evaluation Activity Plan

In addition a series of consultation meetings were held with the senior staff at Dairy Project to understand the context of the project. This helped in developing evaluation methodology. The consultants interacted with the stakeholders including, but not limited to, Dairy Project's

staff, staff of other projects working in the livestock sector, trainees of Dairy Project and other livestock projects and government functionaries.

A team having an in-depth knowledge of undertaking impact evaluation assignments at national level was deployed for the study. This team comprised of M&E specialists, dairy business experts and data analysts.

3.2 Sampling

The objective of the sampling strategy is to create a sample of households benefiting from Dairy Project, split into two categories i.e. treatment household and control household. In order to achieve this goal a multi-stage sampling strategy was adopted. Following steps were undertaken to conduct the baseline:

Phase 1. Defining a sampling frame; is the source material or device from which a sample is drawn. It is a list of all those within a population who can be sampled. In this scenario they are 40,000 farmers, 2,000 WELWs, 1,000 AITs and 100 Model Farms. Once the beneficiaries were identified, Simple Random Sampling (SRS) was used to identify the sampled beneficiaries.

Phase 2. PSU Selection was performed using probability proportion to size. From each selected PSU, beneficiary was selected using circular systematic sampling. Each selected beneficiary was contacted by supervisor to get consent and time for face to face interview. Only CNIC and NIC number was collected to validate interview and information from DRDF registration data.

Based on the above, the following sample was agreed:

Table 3.2-1: Sample Size

Name of District	Sample data collected			
	Farmers	AITs	WLEWs	Total
Bahawalpur	93	27	25	**145**
Khanewal	129	37	34	**200**
Lodhran	82	24	22	**128**
Multan	120	34	32	**186**
Muzaffargarh	81	23	22	**126**
Vehari	128	37	34	**199**
Total	**633**	**182**	**169**	**984**

3.3 Instrument Development

Both quantitative and qualitative approaches were adopted to conduct baseline of Phase-II beneficiaries. These instruments were shared with DRDF project team for comments and sign-off before field testing and finalization. Later during the field staff training these tools were tested through pilot testing and mock exercise. Based on the findings these tools were improved and finalized with the project team. Final questionnaire is attached as **Annex 2**.

The data collected was processed in SPSS for analysis. Detail process of data processing and analysis is mentioned in later section on data analysis.

4. Survey Execution

The survey team first undertook the household listing. During this exercise the teams identified treatment and control households, obtained initial information regarding the households and their locations. This helped the survey teams to locate these households during the baseline survey and later during the end line survey.

The survey teams were hired from the targeted districts as being local the teams they were well conversant with the custom-culture, demographics and local communities.

The survey teams were closely monitored at all levels each survey team was managed and supervised by the survey manger field coordinators and monitoring team. The purpose of this arrangement was to ensure quality of quantitative data collection.

The monitoring teams randomly selected filled forms and re-visited household to validate the information gathered by the field enumerators.

4.1 Field Team Training

Training of field enumerators

Before the data collection exercise, a training was organized for the enumerators and field supervisors representing each district. This training covered concept development and questions understanding, mock exercise, feedback and concept rebuilding. The training was conducted at Multan on 24th may, 2015, this location was selected due to the central location and easy access for the enumerators. Training material for each session was prepared and shared with the trainees. Prior to commencement of the training sessions, detailed training plans were developed and shared with Dairy Project. The training mainly focused on the following:

1. Understanding of community data gathering Guidelines
2. Mock-up Sessions
3. Area Reconnaissance and Participant Selection

Training of Data Entry Operators

During the inception phase data entry operators and data coder was selected who participated in the training session held at Islamabad on 15th June -, the objective of the training was to impart a clear understanding of the program interventions, Survey tools and their objectives and to ensure meticulous data entry. This training workshop was managed through three modules.

Module 1: Survey Understanding
Module 2: Data Entry
Module 3: Data Cleaning

4.2 Field Team Deployment and Data Collection

As part of the survey design phase and upon finalization of required instruments, detailed data collection guidelines for each section and question of the instrument (s) was developed and shared with the enumerators during detailed orientation/training session. These guidelines were implemented in the field by the enumerators under close supervision of field supervisors. Accompanied Visit, Spot checks and back checks for data quality assurance were performed by survey manager, regional coordinator, supervisor and project team leader. The Field Supervisors (FSs) continually trained the enumerators throughout the assignment. They were accompanied with enumerator's teams during the interview until completely confident that all members are able to handle the task on their own.

A daily debriefing session was held at each regional office at the end of each day. The field team performed data editing and data validation tasks. The teams swapped their filled instruments and cross-checked each other's work. Marked envelops having filled out questionnaires were dispatched to the centralized Data Management Hub in Islamabad, by the field supervisor.

4.3 Data Validation

Data quality assurance was insured by:

Measurement Error: As part of the Quality Assurance Mechanism, all measurement errors were be minimized through concept building exercise, mock exercise, and data collection guidelines and accompanied interviews.

Transcription Error: Transcription errors were minimized using data validation checklists. The Enumerators validated the collected information before handing it over to the Field Supervisors (FS). The FS again reviewed all questionnaires before dispatching them to the centralized Data Entry Hub. Any discrepancy in the filled instruments was adjusted using logic, predefined guidelines, enumerators' knowledge and respondents were contacted via phone and revisited for collection of missing information.

Unrepresentative Sampling: To avoid this error, sample was selected from each defined strata with approved proportion. Field supervisors and field monitoring teams ensured that data was collected as per the approved sampling plan and proportion.

Survey Instrument: Survey instrument was validated during mock exercise and pilot testing. To ensure data reliability, detailed guidelines were developed, specific instruction for each question was devised on receipt of survey questionnaire.

4.4 Data Processing / Cleaning

A specialized data entry program was developed in SPSS in line with the quantitative form to feed in the data collected in the field. This was shared with Dairy Project to comment and finalize before the commencement of the survey.

4.5 Data Analysis - Report

The data collected in the field was randomly checked by the field supervisors for completion. This data was sent to Islamabad for data feeding and analysis. Consultants proposed SPSS for data feeding and analysis.

The field supervisor and monitors ensured cleaning of data at field level through checking completeness of forms, consistency and logical flow of information. The data entry operators received clean forms to be processed in the SPSS. To ensure quality double data entry method was adopted. Following steps were be undertaken for data analysis and report writing:

- Indexing of questionnaire
- Double data entry
- Post-entry verification
- Perform Data Analysis
- Consistency Check
- Technical review of data analysis and final datasets
- Draft report

The findings of the study are given in the section 5 of the report.

5. Findings

The finding of the Performance Evaluation survey could be clubbed into three main categories:

Section-1: Women Livestock Extension Workers

Section-2- Artificial Insemination Technicians

Section-3 - Farmers

5.1 Women Livestock Extension Workers

Section Summary

The women in rural areas play an important role in the dairy operations like feeding, milking, general management and healthcare of animals. To overcome the issues of availability of the basic veterinary and animal husbandry services in the villages the Dairy Project envisages training of women from farmer families in basic animal husbandry practices. This would not only provide certified basic veterinary services available at the village level but will also be a source of income and social uplift for the marginalized rural women of the project intervention area.

The Dairy Project during phase I of the project trained and UVAS certified 5,015 women enabling them provide basic veterinary services at the village level. Under the current phase II of the project a batch of 1,000 Women Livestock Extension Workers (WLEWs) will be trained and 1,000 WLEWs will be re-trained which is expected to raise the average income of WLEWs from PKR 1,500 to around PKR 2,500 ($25) on a monthly basis.

This survey was conducted to establish a baseline of socio economic conditions of the area, education, income level and knowledge level of the potential candidates. A sample of 179 women was taken from 6 districts in Punjab. District wise distribution of the sample is given in the table below:

Table 5.1-1: District wise sample distribution

Vehari	Lodhran	Multan	Muzaffargarh	Bahawalpur	Khanewal	Total
35	22	40	23	25	34	179

The respondent under the category of WELWs were selected based on the following criteria.

- Motivated and interested to work as WLEW after training
- Ready to improve economic opportunities/conditions, self-entrepreneur
- Having good communication skills
- Socially active
- Minimum middle enroll/pass ,preferably Matriculate
- Needy (unemployed, not a regular student and from low income family)
- Aged 18- 40 years
- involved in livestock handling and management

None of the respondents were illiterate. A large majority (89 %) of WLEW have completed at least 8 years of schooling. Out of the 89 % the highest %age of respondents, 36% have education up to middle level followed by 31% High school and 12% up to intermediate level. A very small number of respondents (only 2%) have education up to master's level. Out of the total 8% have graduation and 11% attended primary school. More than half (58 %) of

the respondents are married. Marital status varies from one district to the others. Overall household size in the project are is 6.8 with 3.5 males and 3.3 female members per household. Average age of WLEWs is 27.2 years with 54 .2% of WLEWs between 20 to 30 years of age group. About one-fifth of the WLEWs are of 20 years of age or below.

The average monthly income of the households of the respondents is Rs. 17546/- having an average per capita income of Rs.3076/- per month. The main source of income is agriculture which contributes 39 % of the total household income. Dairy and Livestock's contribution to monthly income is at an average 18 % each. One-fourth of the household income comes from other sources like employment, services etc. about two-thirds of the respondents informed that there was no change in their income i.e., present monthly income is the same as that of preceding year. About 10 % reported increase in income and on the other hand more than 26 % reported decline in income level.

In response to question about ownership of productive assets, more than 90 % of respondents reported owning livestock and 68 % reported ownership of Land/real estate. About 56 % of respondents own at least one of sewing machine, washing machine or/and carpentry tools. Proportion of households reported ownership of Gold/Silver and/or precious metals etc. is 30 %. One in every 5 respondents reported having bank account whereas only 7 % have cash savings. Almost everyone in the target districts own a fan and mobile phone. More than 61 % respondents own motorcycle and 56 % own bicycle. Sixty one % own television and 25% has access to radio. Availability of landline phone almost negligible.

A small proportion (13 %) of respondents reported debt. However, almost all are in a position to payback this debt. More than 11 % respondents reported that at least one member of their household was in debt however 80 % of respondents were confident that the other members of the family had the ability payback their debts.

On an average each household has Rs.17,806 monthly expenditures. Household monthly expenses are almost similar (range from Rs 17,780 to 23,100) in all districts except Multan (Rs. 9,727). Major expense at household level is on food items on which almost two-fifths of the total expenses incurred, 12% is spent on health followed by Clothing/footwear 11%, education 9% and a small portion on fuel and electricity.

Data suggests that respondents' contribution to household income from sale of milk is 39 %. Respondents are also contributing a significant portion (almost 20 %) to household income from agricultural as well as non-agricultural sources.

The average cultivatable agricultural land possessed by respondents is calculated as 4.25 acres out of which more than one-quarter of the agricultural land is used for production of fodder.

More than 45 % of the respondents have basic knowledge and 34% have moderate knowledge about animal husbandry. Level of knowledge about animal husbandry and animal health substantially varies across districts. More than two-thirds of the respondents possess knowledge of basic health of farm animals. Large majority lacked general knowledge about animal disease except "foot and mouth" and calf care". A very small portion of respondents had good knowledge about animal diseases.

Respondents have much higher knowledge about animals feed and nutrition needs. About 85 % respondents knew about animal feed and nutrition. Out of the respondents more than 82 % have basic knowledge about Vanda, 72 to 77 % has basic knowledge of Fodder, Silage and Nutrients.

Data suggests that majority of the respondents have basic knowledge on all four types of feeds (vanda, silage, fodder and nutrients) in all districts. Less than three-quarters of respondents reported knowledge of milk preservation. This knowledge varies across districts. More than 83 % of the respondents know farmers in other villages who own livestock.

About 82 % of the respondents mentioned that they were free to work outside their home. Two in every three respondents mentioned that they were able to associate with their business contacts without being accompanied by someone else and 59 % reported no restriction on their mobility.

5.1.1 Respondent Level of Education

A large majority (89 %) of WLEW have completed at least 8 years of schooling. Educational attainment varies among district. This is the highest in Khanewal from where all of the WLEW interviewed reported having completed 8 or more years of schooling whereas this number is lowest in Vehari (80 %) followed by Multan (82 %).

This level of education is specific to the criteria outlined by the dairy project and seems little higher than the national average thus is not comparable to the other relevant studies by the government where female literacy rate is much lower than the target/ selected population of the dairy project. This is due to the reason that the WLEW's would eventually receive training which involves good amount of both classroom and practical training and requires basic level of education to read, comprehend and understand. The actual projects endeavors to engage women with more education if available and willing in rural context.

Table 5.1-2: Level of Education; District wise Distribution

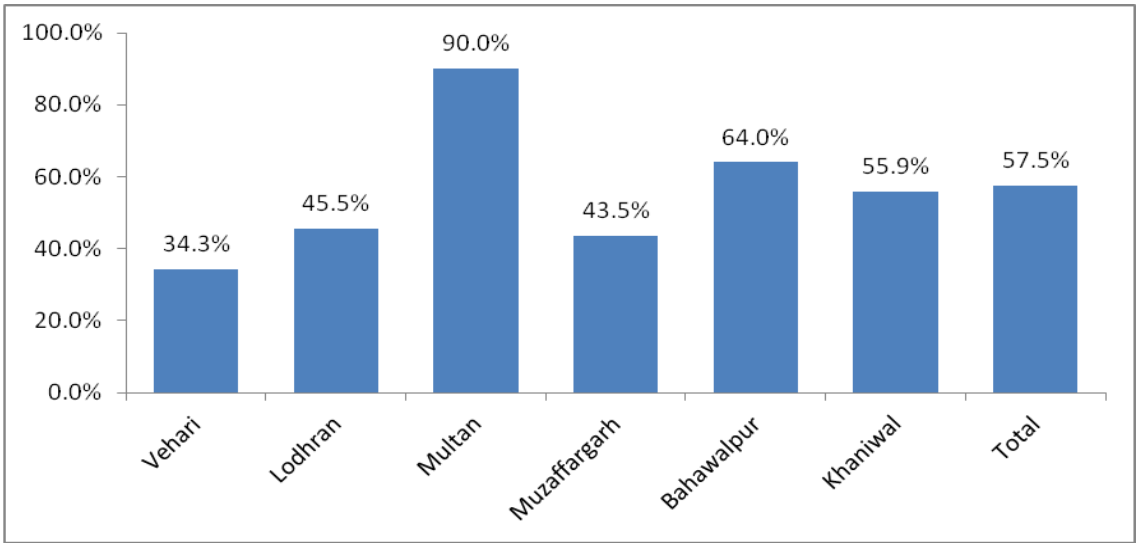
Level of Education	Vehari	Lodhran	Multan	Muzaffargarh	Bahawalpur	Khanewal	Total
Illiterate	0%	0%	0%	0%	0%	0%	0%
Up to Primary	20%	5%	18%	4%	16%	0%	11%
Middle	43%	14%	58%	39%	24%	24%	36%
High School	17%	32%	25%	35%	52%	35%	31%
Intermediate	14%	41%	0%	4%	8%	12%	12%
B.A/B.Sc	6%	9%	0%	13%	0%	24%	8%
M.A/M.Sc	0%	0%	0%	4%	0%	6%	2%
Total	100%	100%	100%	100%	100%	100%	100%
N	35	22	40	23	25	34	179

5.1.2 Respondent Marital Status

Figure 5.1-1 shows marital status of respondents. Figure elicits that more than half (58 %) of the respondents are married. Marital status varies from among districts. The highest proportion of respondents was reported from Multan (90 %) and the lowest from Vehari (34 %).

Although, the project does not discriminate between married and unmarried women for selection. But in general it is seen that in rural context the married WLEW's are established in an environmental setting and is more sustainable in the same village, where by the unmarried women after marriage at times move to another village where the context of being WLEW may not apply.

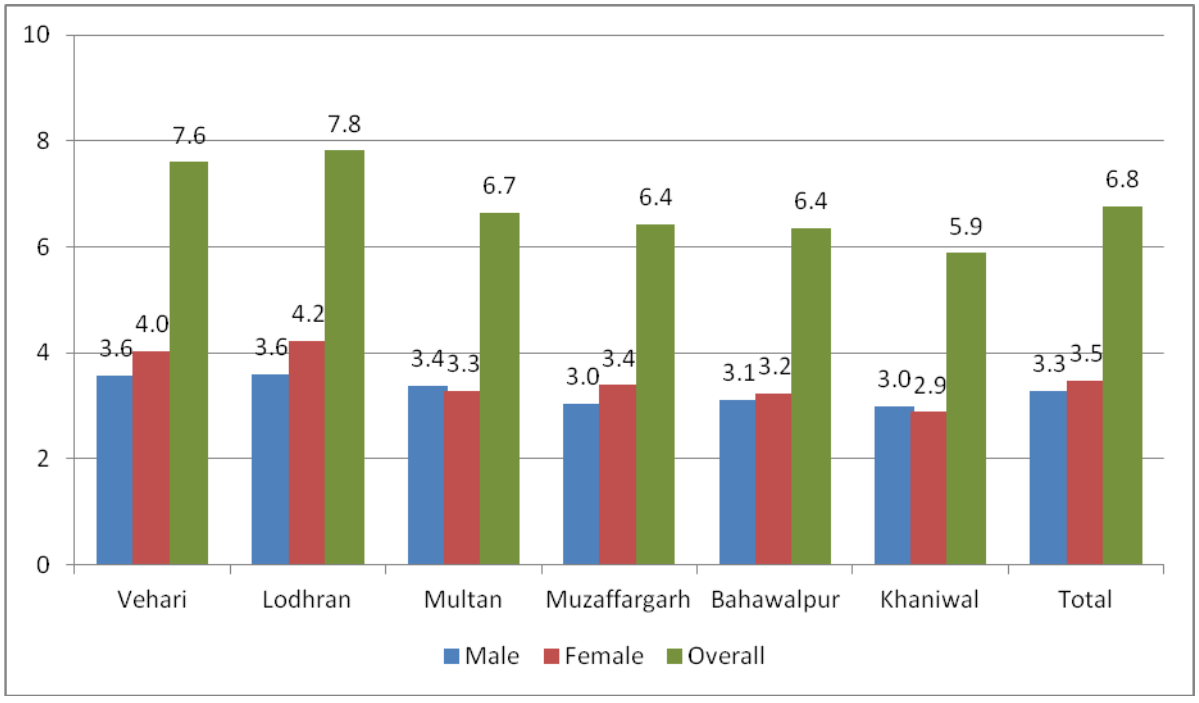
Figure 5.1-1: Marital Status



5.1.3 Respondent Average Family Size

Figure 5.1-2 shows mean number of male, female and mean number of persons per household. The overall, household size is 6.8. Average number of male and female members in a household is almost same. When comparing household size among districts, it is clear that household size in Lodhran (7.8) is the largest followed by Vehari (7.6). On the other hand, household size in Khanewal is the smallest among districts.

Figure 5.1-2: Average Family Size



5.1.4 Respondent Age Group

Table 5.1-3 presents the district wise age group of the WLEWs. The overall average age of WLEWs is 27.2 years. Overall, more than three-fourths of the WLEWs are between 20 to 40

years of age group. About one-fifth of the WLEWs are young (20 years or below). Proportion of young WLEWs is the highest in Lodhran (32%) and the lowest in Multan (10%). The oldest WLEWs were reported from Multan where average age of a WLEWs is 31.3 years whereas the youngest WLEWs were reported from Muzaffargarh where average age of a WLEW is 23.9 years.

Table 5.1-3: Age Group

Age Group	Vehari	Lodhran	Multan	Muzaffargarh	Bahawalpur	Khanewal	Total
17 - 20	17.1%	31.8%	10.0%	26.1%	20.0%	17.6%	19.0%
20 - 30	62.9%	50.0%	40.0%	65.2%	56.0%	55.9%	54.2%
30 - 40	11.4%	18.2%	45.0%	8.7%	20.0%	23.5%	22.9%
40 - 50	2.9%	0.0%	5.0%	0.0%	4.0%	2.9%	2.8%
50 - 60	5.7%	0.0%	0.0%	0.0%	0.0%	0.0%	1.1%
60+	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
Mean	27.8	24.6	31.3	23.9	26.8	26.1	27.2
N	35	22	40	23	25	34	179

5.1.5 Respondent Household Income

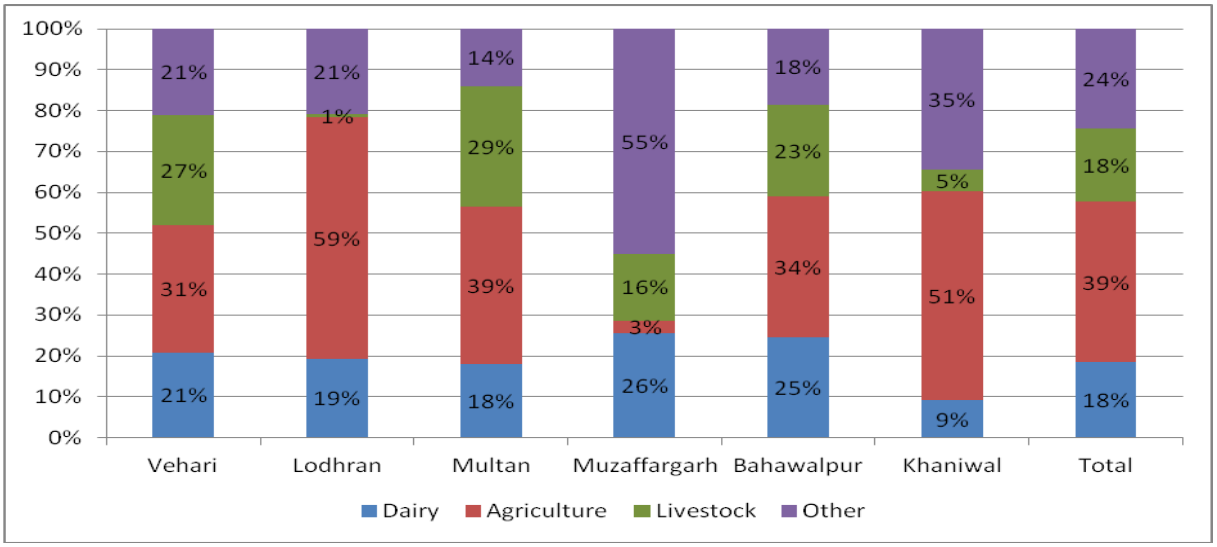
Table 5.1-4 below presents data on district wise household income segregated by sources of income. The overall average household monthly income of the project are is Rs. 17,546. This is highest in Bahawalpur (Rs. 21,660) followed by Khanewal (Rs. 20,588) and is the lowest (Rs. 10,204) in Vehari. Household's monthly income from Dairy is Rs. 3,228, from Agriculture is 6,901, from Livestock is Rs. 3,123 and from other sources is Rs. 4,293.

Table 5.1-4: Average Household Income by District

District	Household Income	Dairy	Agriculture	Livestock	Other
Vehari	14,906	3,106	4,657	4,000	3,143
Lodhran	18,091	3,500	10,682	136	3,773
Multan	18,620	3,350	7,183	5,463	2,625
Muzaffargarh	10,204	2,617	304	1,674	5,609
Bahawalpur	21,660	5,340	7,440	4,880	4,000
Khanewal	20,588	1,897	10,500	1,088	7,103
Total	17,546	3,228	6,901	3,123	4,293

Figure 5.1-3 presents data on contribution of each source of income to the total household income. The main source of household monthly income is agriculture which contributes 39 % of the total household income. Dairy and Livestock's contribution is 18 % each. One-fourth of the household income comes from other sources like employment, services etc.

Figure 5.1-3: Proportion contribution of source of income by district



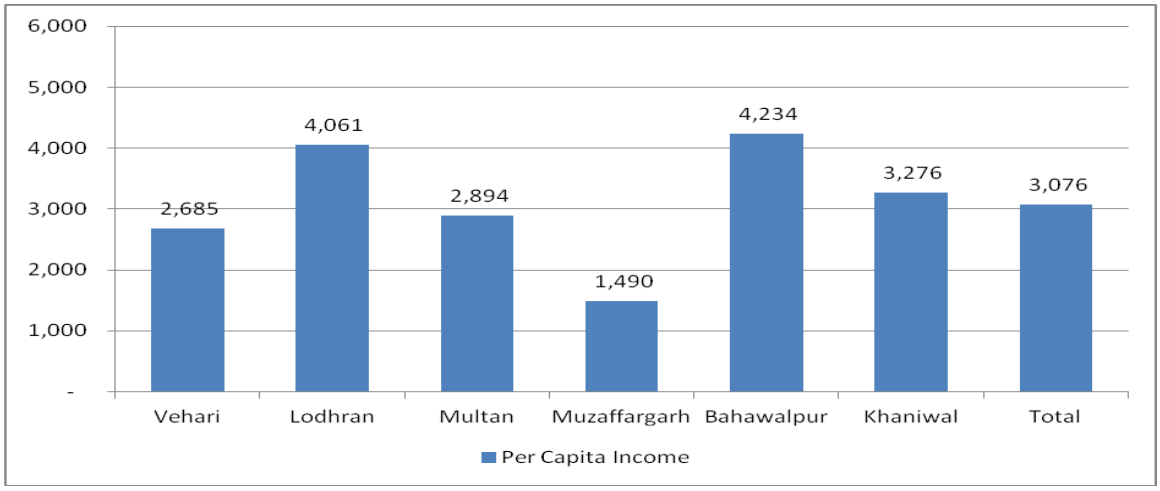
Proportion of income from each source varies from district to district. For example, households receive more than half the income from agriculture sector in Lodhran (59 %) and Khanewal (51 %). In Muzaffargarh 55 % of the income is from other sources whereas in Vehari and Multan have similar sources of income. Livestock makes important contribution to income in Vehari (27 %), Multan (29 %) and Bahawalpur (23 %). At the same time, Dairy sector also contribute one-fourth to the monthly income in Muzaffargarh and Bahawalpur and about one-fifth in Vehari, Lodhran and Multan.

The income for dairy and livestock is significant, but the net income varies from household to household differ due to expenses on livestock and dairy resources. In case the people in the household including WLEW's or farmers have a formal training than they can actually save a lot of money on feed, nutrition and medicines/ health related expenses) and with better management and farm practices can produce more milk yield and related income. At times the animals are over fed or underfed without the knowledge of balanced nutrition. Similarly timely vaccination and preventative health care of livestock can add good value to dairy related income.

5.1.6 Per Capita Household Income

Figure 5.1-4 below shows the per capita household income for surveyed districts. Overall, Per capita household income is more than Rs. 3000 per month. This income varies substantially across districts. The highest per capita income is reported from district Bahawalpur (Rs. 4,234) and the lowest from Muzaffargarh (Rs. 1,490).

Figure 5.1-4: Per Capita Monthly Income



5.1.7 Household Income comparison with previous Year

Respondents were asked to compare current household monthly income with previous year's income. About two-thirds of the respondents replied that there was no change i.e. present monthly income is the same as of previous. About 10 % reported increase in income but on the other hand, more than 26 % reported decline in their income levels.

Respondents from Bahawalpur reported no change in income. About 86% from Lodhran reported same level of income 61% respondents from Muzaffargarh reported decline in income, 50% respondents from Khanewal reported no change, more than one-fourth reported decline and less than one-fourth reported increase in income. Table 5.1-5 below gives the district wise breakdown in income patterns.

Table 5.1-5: Household Income Changes in the previous year

District	Increased	Stayed the Same	Decreased	Total	N
Vehari	14.3%	60.0%	25.7%	100.0%	35
Lodhran	0.0%	86.4%	13.6%	100.0%	22
Multan	7.5%	62.5%	30.0%	100.0%	40
Muzaffargarh	13.0%	26.1%	60.9%	100.0%	23
Bahawalpur	0.0%	100.0%	0.0%	100.0%	25
Khanewal	23.5%	50.0%	26.5%	100.0%	34
Overall	**10.6%**	**63.1%**	**26.3%**	**100.0%**	**179**

5.1.8 Household Productive Assets Ownership

In response to question about ownership of some selected productive assets more than 90 % of respondents own livestock whereas 68 % reported ownership of Land/real estate. About 56 % own at least one of sewing machine, washing machine or/and carpentry tools. 30 % of the households reported ownership of Gold/Silver and/or precious metals One in 5 reported having bank account and only 7 % of the respondents have cash savings.

Almost everyone owns livestock in Multan, Khanewal, Bahawalpur and Muzaffargarh. Land ownership reported from Khanewal (91 %) is the highest among all districts followed by Lodhran (82 %) and the lowest in Muzaffargarh (44 %)

As mentioned that 90% respondents have livestock assets. This is indeed the socio-cultural and livelihood dynamics of people of rural Punjab where livestock is an essential part of household- Milk and milk products are part of staple diet and additional milk is sold for additional income- Since this income is a direct cash transaction and supplements the household kitchen expenses and even other household expenses, thus livestock remains a priority part of asset holding. In the rural setting it is matter of pride by saying “we have our own dairy animals and milk from our children” and we do not buy milk. More importantly the crop cycles yields over three to four months and there is a gap of few months between investment and harvest, whereby the dairy is on a daily cash cycle or “instant” income scenario which is very supportive to rural livelihood.

Half of the respondents have bank account in Lodhran which is the highest proportion among all districts whereas only 8 and 9 % reported bank account from Bahawalpur and Lodhran respectively.

Tractors/farm equipment ownership is the highest in Khanewal where 27 % reported ownership of farm equipment whereas none of the respondents in Vehari and only few (about 4 %) from Bahawalpur, Muzaffargarh and Lodhran reported ownership of tractor/farm equipment.

Table 5.1-6: Households Owning Productive Assets

Assets	Vehari	Lodhran	Multan	Muzaffargarh	Bahawalpur	Khanewal	Overall
Savings certificates	0.0%	0.0%	2.5%	4.3%	0.0%	0.0%	1.1%
Cash savings	5.7%	27.3%	0.0%	8.7%	0.0%	5.9%	6.7%
Bank accounts	8.6%	50.0%	25.0%	17.4%	8.0%	11.8%	19.0%
Gold, silver and precious metals (including jewelry)	22.9%	9.1%	35.0%	39.1%	28.0%	38.2%	29.6%
Livestock	77.1%	77.3%	100.0%	91.3%	96.0%	97.1%	90.5%
Land/real estate	51.4%	81.8%	67.5%	43.5%	72.0%	91.2%	68.2%
Tractor/farm equipment	0.0%	4.5%	10.0%	4.3%	4.0%	26.5%	8.9%
Other tools (e.g. sewing machine, washing machine, carpentry tools)	54.3%	13.6%	67.5%	87.0%	44.0%	58.8%	55.9%
N	35	22	40	23	25	34	179

5.1.9 Household General Assets

Table 5.1-7 presents data on ownership of durable assets. Almost everyone in these districts own fans. Ownership of mobile phone is also widely reported. More than 61 % respondents own motorcycle and 56 % own bicycle. Sixty one percentage own television and more than half reported ownership of washing machine.

Access to radio is reported by 25 % and availability of landline phone almost negligible.

Ownership of some of the assets is almost universal in all districts such as fans and mobile phone however some variation exits among districts in ownership of the some of the assets like refrigerator, radio and motorcycle. For example, ownership of refrigerator is as high as 70 % in Multan but its ownership is as low as 17% and 18 % in Muzaffargarh and Lodhran respectively. Similarly, amongst all the districts ownership of radio is highest in Lodhran from where almost three in four respondents reported owning a radio set but on the other hand none of the respondents owned any radio in Khanewal.

Table 5.1-7: Ownership of Durable Assets

Assets	Vehari	Lodhran	Multan	Muzaffargarh	Bahawalpur	Khanewal	Total
Fan	100.0%	100.0%	97.5%	95.7%	96.0%	100.0%	98.3%
Refrigerator	51.4%	18.2%	70.0%	17.4%	56.0%	50.0%	47.5%
TV with Dish Antenna	11.4%	31.8%	52.5%	21.7%	44.0%	32.4%	33.0%
TV without Dish Antenna/Cable	28.6%	31.8%	25.0%	43.5%	32.0%	20.6%	29.1%
Radio	22.9%	72.7%	32.5%	13.0%	16.0%	0.0%	24.6%
Land line phone	2.9%	0.0%	2.5%	0.0%	4.0%	2.9%	2.2%
Cell phone	85.7%	100.0%	100.0%	95.7%	92.0%	94.1%	94.4%
Washing machine	62.9%	27.3%	52.5%	52.2%	56.0%	55.9%	52.5%
Bicycle	54.3%	77.3%	40.0%	78.3%	64.0%	44.1%	56.4%
Motorcycle	54.3%	18.2%	90.0%	47.8%	84.0%	55.9%	61.5%

5.1.10 Respondent & Household Debt

A small proportion (13 %) of respondents reported debt. However, almost all are in a position to payback this debt. More than 11 % respondents reported that at least one household member was in debt however 80 % of respondent were confident that family members having debt had the ability payback their loans.

More than one-third of respondents from Vehari district reported debt and zero to negligible proportion from Bahawalpur and Multan reported debt respectively.

Table 5.1-8: Percentage of household members having debt

Question	Vehari	Lodhran	Multan	Muzaffargarh	Bahawalpur	Khanewal	Total
% having debt	34.3%	9.1%	2.5%	21.7%	0.0%	8.8%	12.8%
Able to make regular repayment	100.0%	100.0%	100.0%	80.0%	0.0%	66.7%	91.3%
Everyone in household able to make regular repayment?	100.0%	0.0%	100.0%	80.0%	0.0%	66.7%	82.6%
Any other household member owes a loan	28.6%	0.0%	2.5%	30.4%	0.0%	5.9%	11.2%

(Debt)?							
Do they make regular repayment?	100.0%	-	100.0%	57.1%	0.0%	50.0%	80.0%

5.1.11 Distribution of Household Expense

Figure 5.1-5 presents data on average household expenses. Figure shows that on an average, a household has Rs.17,806 monthly expenditures. Household monthly expenses are almost similar (in range from Rs 17,780 to 23,100) in all districts except Multan (Rs. 9,727).

Figure 5.1-5: Household Monthly Expenses by district

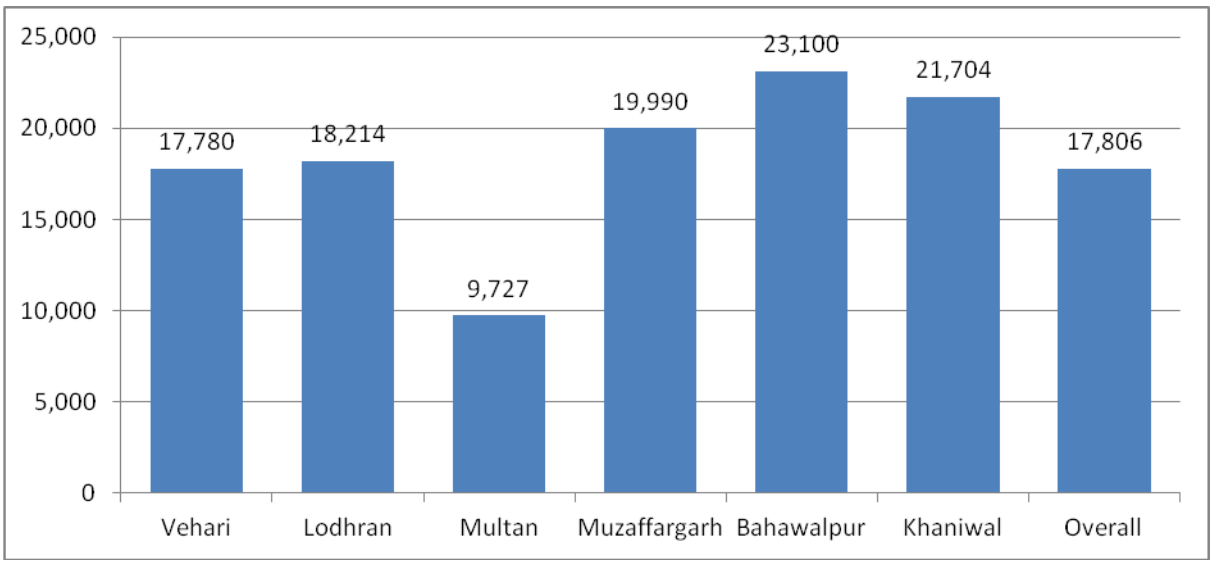


Table 5.1-9 below gives percentage of distribution of expenses by item in each district. Majority of the household expenses is on food items which makes up almost two-fifths of the total expenses incurred followed by 12% of expenses on health followed by Clothing/footwear (11 %), education (9%) and same (9%) proportion on fuel and electricity.

Item wise expenditure varies for one district to the other. For example, in three districts (Multan, Muzaffargarh and Bahawalpur) households spend more than 44 % of the total income on food items. Health expenses vary across districts in Muzaffargarh a significant proportion (20 %) of household expenditures is on health whereas in Bahawalpur this is only 6 %. Similarly education expenses also vary among districts. Proportion of expenses going to education is the highest in Muzaffargarh (16 %) and the lowest in Multan 5%. Similar higher proportion of money is spent on clothing/footwear in Lodhran and Khanewal as compared to other districts. This proportion is very low in Muzaffargarh i.e. 4%.

Table 5.1-9: % distribution of Household Expenses by Item and District

Item	Vehari	Lodhran	Multan	Muzaffar garh	Bahawal pur	Khanewal	Overall
Food, water	37.8	34.4	45.4	43.9	44.0	31.5	38.8
Health	9.5	13.0	11.9	20.2	6.1	14.2	12.3

Education	8.5	12.6	4.8	15.6	6.1	8.9	9.2
Clothing / footwear	12.5	15.8	9.8	4.2	7.3	15.4	11.1
Fuel and electricity	7.1	8.7	10.6	8.7	4.8	11.5	8.5
Transport	6.3	4.9	10.0	3.9	3.6	9.6	6.5
Communication (phone, etc.)	6.9	2.9	4.6	3.4	4.3	4.1	4.5
Housing (rent & other costs)	1.0	2.1	3.0	0.0	0.0	2.2	1.3
Miscellaneous	10.4	5.6	0.0	0.0	23.8	2.6	7.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 5.1-10: Household Expenses (PKR.) by Item and District

Item	Vehari	Lodhran	Multan	Muzaffar garh	Bahawal pur	Khanewal	Total
Food, water	6,714	6,273	4,413	8,783	10,160	6,846	6,918
Health	1,683	2,364	1,156	4,043	1,420	3,090	2,183
Education	1,514	2,295	465	3,122	1,400	1,925	1,644
Clothing / footwear	2,214	2,886	953	848	1,680	3,346	1,980
Fuel and electricity	1,263	1,577	1,033	1,733	1,100	2,487	1,520
Transport	1,129	886	975	783	840	2,074	1,159
Communication (phone, etc.)	1,234	523	446	678	1,000	897	803
Housing (rent & other costs)	171	386	288	-	-	484	237
Miscellaneous	1,857	1,023	-	-	5,500	557	1,363
Overall	17,780	18,214	9,727	19,990	23,100	21,704	17,806

5.1.12 Respondent Contribution in Household Income

Table 5.1-11 below presents data on respondent's contribution to household income. It is evident that respondents' contribution to household income from sale of milk is 39 %. Respondent is also contributing a significant portion (almost 20 %) to household income from agricultural as well as non-agricultural sources.

Contribution to household income varies across districts and source of income. Respondents contribute about 71 % to household income from sale of milk in Multan and 62 % in Bahawalpur. Similarly in Multan 69 % of household income comes from Agriculture. In Khanewal, respondents share to income from non-agricultural sources is 76 % and household's income from dairy products is negligible.

Table 5.1-11: Contribution to Household Income by Source and District

District	Sale of milk		Agriculture		Non-Agriculture income	
	Income (Rs)	Contribution (%)	Income (Rs)	Contribution (%)	Income (Rs)	Contribution (%)
Vehari	3,023	21.5	4,343	5.3	9,371	25.9
Lodhran	3,418	0.0	10,682	0.0	3,091	22.1
Multan	4,025	71.4	7,050	69.1	3,050	27.9
Muzaffargarh	2,617	38.6	304	0.0	18,287	4.4
Bahawalpur	3,740	61.5	7,040	3.4	8,440	1.9
Khanewal	1,750	0.0	7,706	3.8	4,500	75.5
Overall	3,102	39.3	6,223	19.7	7,277	20.9

5.1.13 Land Ownership (Acres)

Average land holding in the project area is 4.25 acres of cultivatable agricultural land. Land holdings size varies across districts. Respondents in Khanewal own more agricultural land compared to other districts. Land ownership is very minimal in Muzaffargarh.

When respondents were asked about proportion of agricultural land used for growing fodder, it was learnt that more than one-quarter of the agricultural land was used for fodder. Proportion of land used for fodder also varies across districts. Though land holding size is very small in Muzaffargarh but large proportion of this is used for fodder. In Lodhran and Multan, 33 and 29 % of land was used for fodder respectively. Table 5.1-12 below gives the details of the average land holding and utilization.

Table 5.1-12: Ownership of Cultivatable Agricultural Land and %age usage for Fodder

District	Cultivatable Agricultural land (Acres)	% used for Fodder
Vehari	3.97	19.4
Lodhran	2.32	33.3
Multan	5.50	29.1
Muzaffargarh	.91	42.9
Bahawalpur	3.32	27.7
Khanewal	7.24	22.0
Overall	4.25	25.5

5.1.14 Knowledge about Animal Husbandry

Figure 5.1-6 show that one in every four respondents has no knowledge about animal husbandry. More than 45 % have basic knowledge and 34 % has moderate knowledge about animal husbandry.

Level of knowledge about animal husbandry substantially varies across districts (Table 5.1-13). For example, 44 % of the respondents in Khanewal don't know anything about animal husbandry whereas on the other hand all of the respondents in Bahawalpur have basic knowledge. Also level of knowledge is much higher in Muzaffargarh where more than 60 % respondents possess moderate knowledge.

The knowledge related to animal husbandry is primarily traditional and with some modern knowledge conceived from exiting nearby vets and some other projects from the public of private sectors, but in general the knowledge about animal husbandry as presented in this section is primarily traditional- This is not comparable to formal and scientific based animal husbandry education (both at vocational level and or formal college level).

Figure 5.1-6: Level of respondent's knowledge about animal husbandry

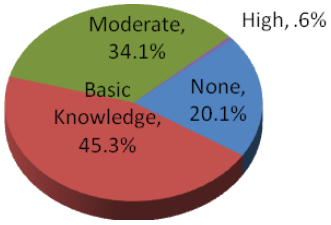


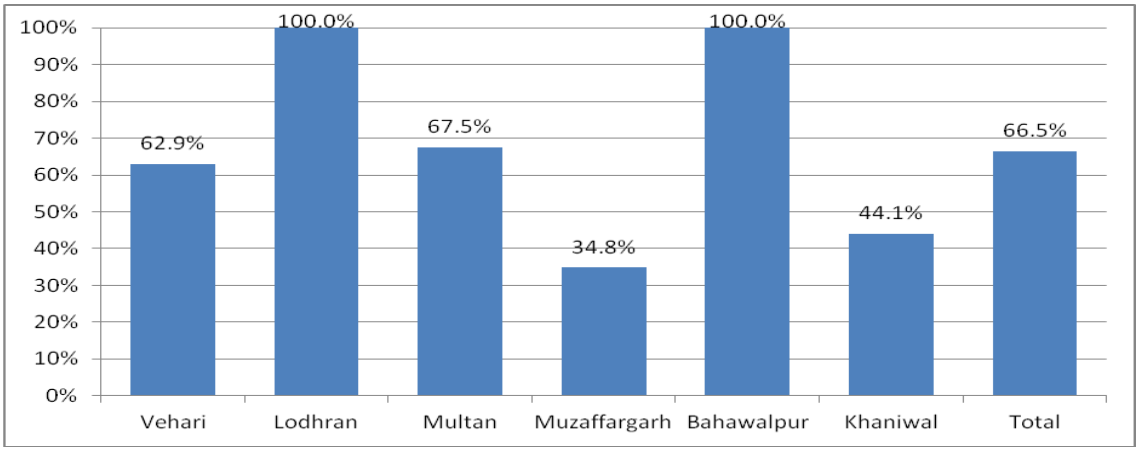
Table 5.1-13: Knowledge about Animal Husbandry

District	None	Basic Knowledge	Moderate knowledge	High knowledge	Total
Vehari	25.7%	22.9%	48.6%	2.9%	100.0%
Lodhran	4.5%	95.5%	0.0%	0.0%	100.0%
Multan	25.0%	25.0%	50.0%	0.0%	100.0%
Muzaffargarh	4.3%	34.8%	60.9%	0.0%	100.0%
Bahawalpur	0.0%	100.0%	0.0%	0.0%	100.0%
Khanewal	44.1%	26.5%	29.4%	0.0%	100.0%
Total	**20.1%**	**45.3%**	**34.1%**	**.6%**	**100.0%**
N	36	81	61	1	179

5.1.15 Knowledge of Basic Health of Farm Animal

As presented in Figure 5.1-7 more than two-thirds of the respondents possess knowledge of basic health of farm animals. The knowledge level varies significantly from one district to the other. Lodhran and Bahawalpur top the list of districts in terms of having knowledge about the basic health of farm animals. Two out of every three respondents in Vehari and Multan possessed knowledge about basic health, however, this knowledge is low in Muzaffargarh and Khanewal.

Figure 5.1-7: Knowledge about basic health of farm animal



5.1.16 Knowledge Level about Basic Health of Farm Animals

Table 5.1-14 below presents data on respondents' knowledge about animal diseases which is generally lacking amongst the participants. The only form of diseases known to the respondents were 'foot and mouth' disease and 'Calf care'. A very small portion of respondents had good knowledge regarding the subject.

The preventative health care is critical to animal health and can be attained with some basic training to at least identify basic illnesses and diseases. Again traditional knowledge and related cures are "called knowledge" which in certain cases are good but not comparable to formal training on animal health and best farm practices.

Most respondents have good knowledge of "foot and mouth" disease and related vaccination etc. but other key issues like mastitis, tick fever, gastro and other preventions for diarrhea, mal nutrition, treatment of small wounds etc. and other key vaccination and their necessity is not taken care in time and are only addressed when the same really gets serious and needs special veterinary care. The skills training by dairy project does include all these relevant health issues and there has been great improvement during the dairy project phase 1 for saving veterinary expenses and even livestock fatalities.

Table 5.1-14: Knowledge about animal diseases

Disease	Poor	Fair	Average	Good	Excellent	Total	N
Diarrhea	54.6%	31.9%	10.1%	2.5%	.8%	100%	179
Tympani	56.3%	29.4%	10.1%	4.2%	0.0%	100%	179
Indigestion	52.9%	30.3%	12.6%	4.2%	0.0%	100%	179
Parasitic Infestation	58.8%	25.2%	7.6%	7.6%	.8%	100%	179
Mastitis	48.7%	33.6%	11.8%	5.9%	0.0%	100%	179
ND Vaccination	41.2%	33.6%	13.4%	10.1%	1.7%	100%	179
Hemorrhagic Septicemia	55.5%	28.6%	9.2%	5.9%	.8%	100%	179
Foot & Mouth Diseases	26.9%	28.6%	30.3%	9.2%	5.0%	100%	179
Calf Care	26.1%	26.9%	25.2%	19.3%	2.5%	100%	179
Proper Shed	50.4%	23.5%	16.0%	7.6%	2.5%	100%	179

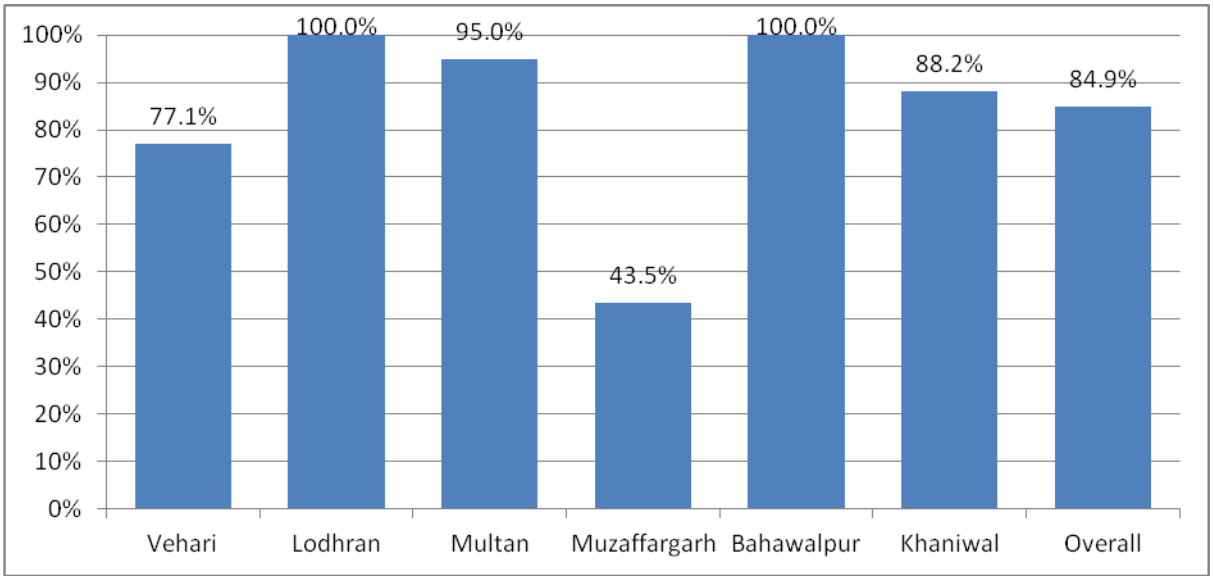
5.1.17 Knowledge of Farm Animal Feed & Nutrition Requirement

Respondents have much higher knowledge about animals feed and nutrition needs. About 85 % respondents knew about animal feed and nutrition. This knowledge is universal for all districts except Muzaffargarh where only 44 % respondents had knowledge about animal feed and nutritional needs. The figure below gives district wise the details of the knowledge level.

The farmers in general are well aware of animal feed and nutrition due to at least 4 crop cycles and availability of fodder in the region over centuries. But awareness on good animal feeding and balanced nutrition is somewhat different. Farmers in some cases are at times over feeding their animals and some underfeeding. The feed has direct consequences on dairy and livestock related income and if farmers are trained formally on balance animal nutrition then the same has positive impact on overall livestock and dairy income.

In most areas (85%) have good knowledge because there is also a partial impact of some earlier projects from other institutions but the gap is still very big and much more intervention required.

Figure 5.1-8: Knowledge of animal feed and nutrition requirement



5.1.18 Knowledge Level About types of Animal Feed

Out of the total respondents more than 82 % had basic knowledge about Vanda, 72% to 77 % possessed basic knowledge of Fodder, Silage and Nutrients.

Figure 5.1-9 below gives the details of the level of knowledge regarding the types of animal feed. Table 5.1-15 presents level of knowledge regarding types of animal feed by district. Data suggests that majority of the respondent's possessed basic knowledge on all four type of feeds in all districts.

Figure 5.1-9: Level of Knowledge about Type of Animal Feed

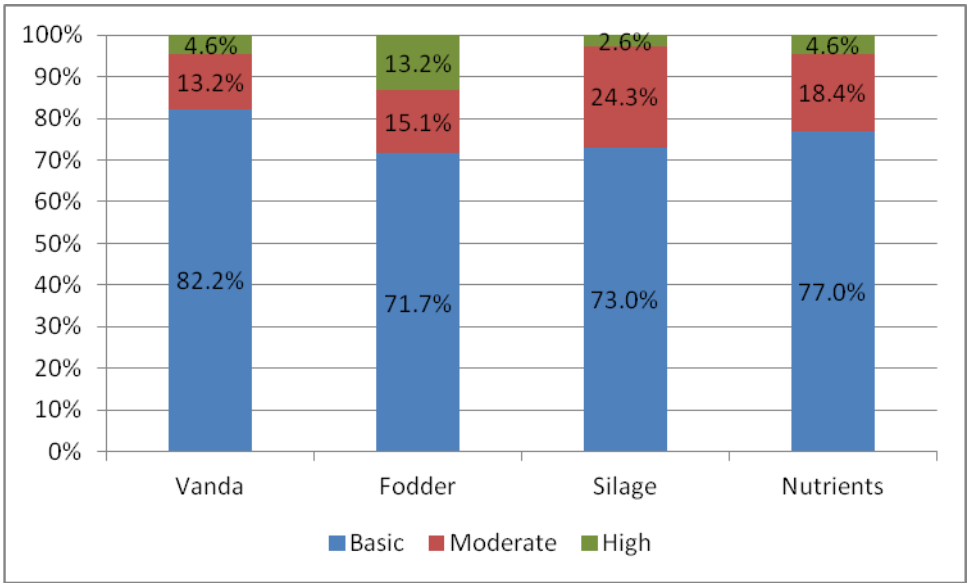


Table 5.1-15: District wise %age Distribution of Respondents' Knowledge by Type of Animal Feed

Vehari	Basic	Moderate	High	Total
Vanda	77.8%	3.7%	18.5%	100%
Fodder	55.6%	7.4%	37.0%	100%
Silage	55.6%	33.3%	11.1%	100%
Nutrients	63.0%	25.9%	11.1%	100%
Lodhran				
Vanda	90.9%	9.1%		100%
Fodder	59.1%	40.9%		100%
Silage	100.0%	0.0%		100%
Nutrients	100.0%	0.0%		100%
Multan				
Vanda	81.6%	18.4%	0.0%	100%
Fodder	76.3%	5.3%	18.4%	100%
Silage	47.4%	52.6%	0.0%	100%
Nutrients	65.8%	26.3%	7.9%	100%
Muzaffargarh				
Vanda	60.0%	40.0%	0.0%	100%
Fodder	50.0%	40.0%	10.0%	100%
Silage	50.0%	50.0%	0.0%	100%
Nutrients	60.0%	40.0%	0.0%	100%
Bahawalpur				
Vanda	96.0%	4.0%		100%
Fodder	96.0%	4.0%		100%
Silage	100.0%	0.0%		100%
Nutrients	96.0%	4.0%		100%

Khanewal				
Vanda	76.7%	16.7%	6.7%	100%
Fodder	76.7%	16.7%	6.7%	100%
Silage	86.7%	10.0%	3.3%	100%
Nutrients	76.7%	20.0%	3.3%	100%
Overall				
Vanda	82.2%	13.2%	4.6%	100%
Fodder	71.7%	15.1%	13.2%	100%
Silage	73.0%	24.3%	2.6%	100%
Nutrients	77.0%	18.4%	4.6%	100%

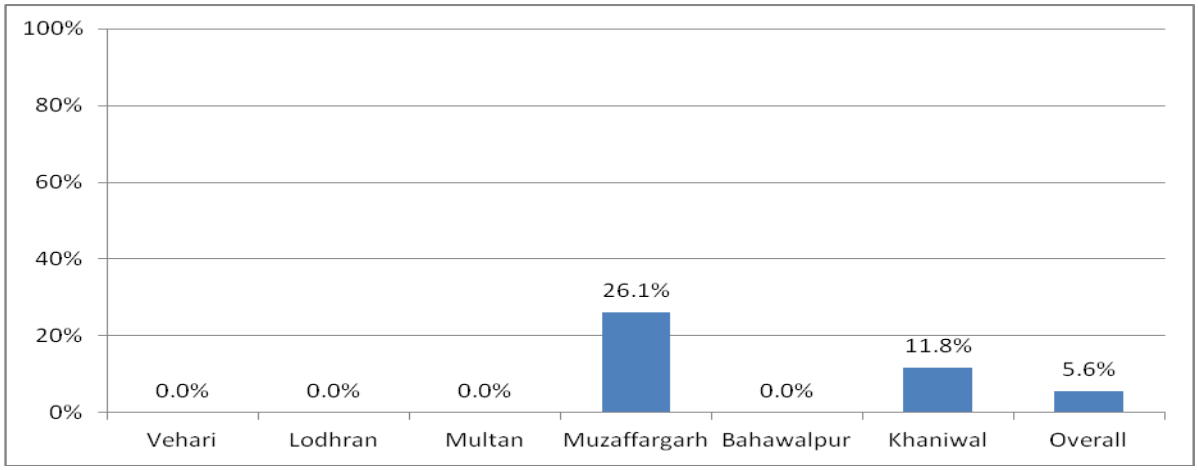
5.1.19 Livelihood Training

Figure 5.1-10 below highlights the only 6 % of the respondents have received training on livelihood. A total of 26% respondents from Muzaffargarh and 12 % from Khanewal districts received this training. In the remaining districts no training was conducted.

Of those who received the training, the duration was two weeks for 3 respondents, one month for 3 respondents and more than 3 months for 2 respondents.

Five respondents received training on cloth stitching/embroidery, 3 received training on livelihood one as beautician and one as mechanic.

Figure 5.1-10: Respondents who received Livelihood training



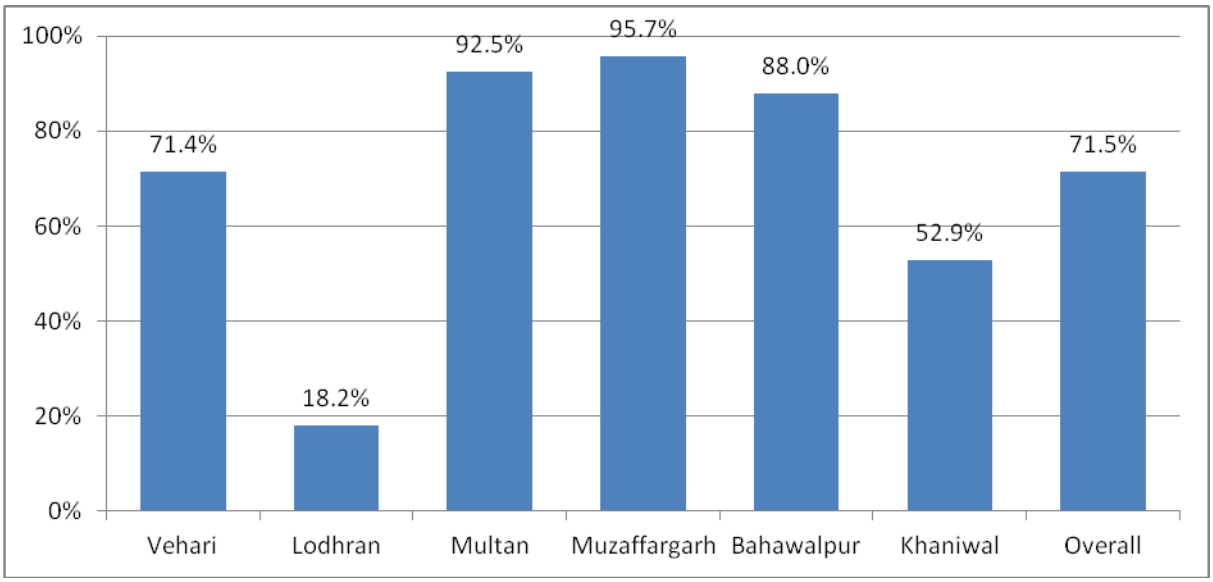
5.1.20 Knowledge regarding Milk Preservation

Less than three-quarters of respondents reported having knowledge of milk preservation. This knowledge varies across districts. Milk preservation knowledge was the highest in Multan and Muzaffargarh from where 92 % and 96 % of respondents had milk preservation knowledge. However, it is lower in Khanewal (53 %) and lowest in Lodhran (18 %).

The milk preservation knowledge is mainly traditional way of churning butter, or accumulated milk fat (where milk is cooked to a semi hard glue type level) called “Khoya” used in traditional sweets. The direct milk preservation is through milk chillers and or cold chain and also involving pasteurization and cooling of milk. Due to electrify shortage the farmers even

with sufficient knowledge cannot reserve milk because milk chillers or refrigerators cannot work due to lack of electricity. The milk preservation is successful where milk processors install generators and milk chillers and buys milk from farmers or some large farmers who own their own generators and milk chillers. In the past a number of projects tried developing cold chain for milk but still a very long way to go before a cold chain is available to large group of farmers and milk districts.

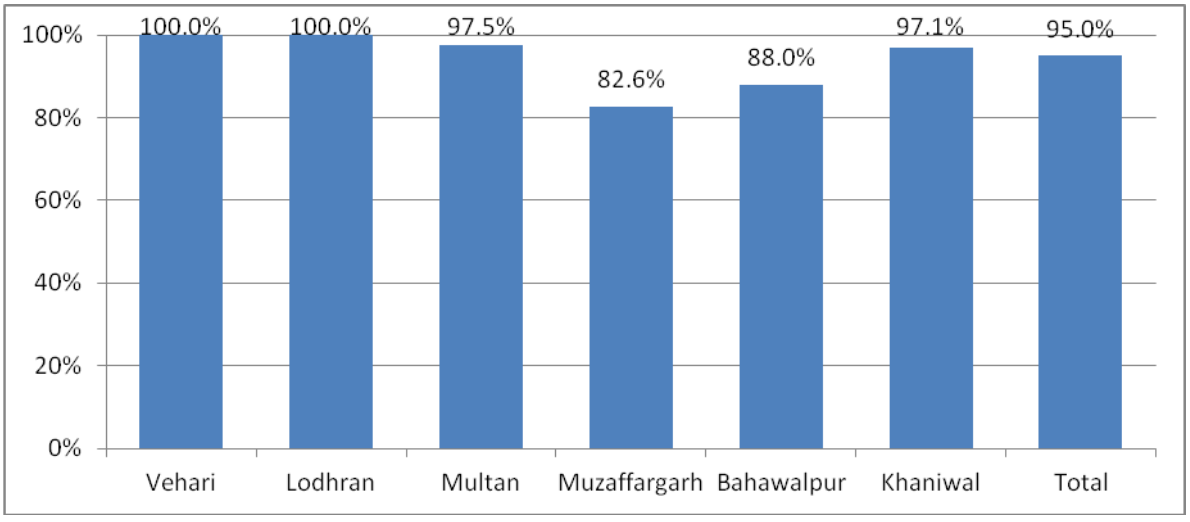
Figure 5.1-11: Knowledge regarding milk preservation



5.1.21 Knowledge about Farmers owning livestock

Knowledge about other farmers owning livestock in the same village was very high in all districts and almost all the respondents knew about ownership status. Figure 5.1-12 below gives district wise details on the knowledge level.

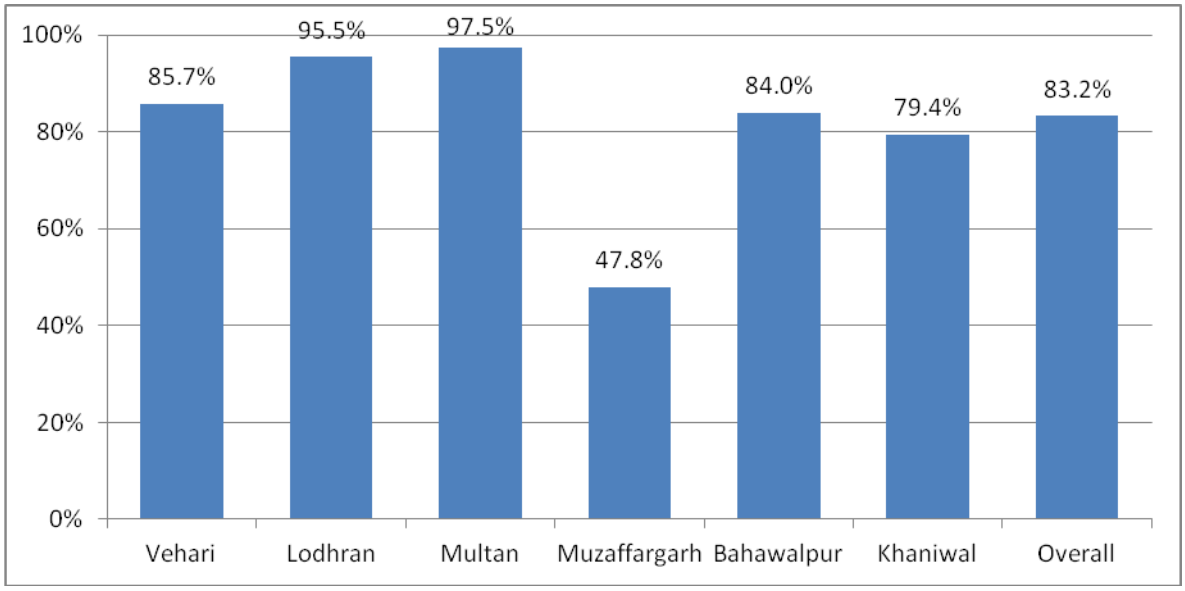
Figure 5.1-12: Knowledge about farmers owning livestock



Regarding knowledge about farmers owning livestock in other villages more than 83 % of the respondents knew about the ownership status. This knowledge was highest in Lodhran (96 %) followed by Multan (98 %). A large majority of respondents in Vehari (86 %), Bahawalpur

(84 %) and Khanewal (79 %) knew about farmers in other village who have livestock. However, this knowledge is very low in Muzaffargarh from where less than half know about farmers who own livestock in other villages.

Figure 5.1-13: Knowledge about farmers in other villages owning livestock



5.1.22 Family Issues & Challenges

Figure 5.1-14 below present's data on respondents' mobility. Respondents were asked whether they could work outside their home, if they were able to associate with their business contacts on their own and whether they had any restriction on mobility.

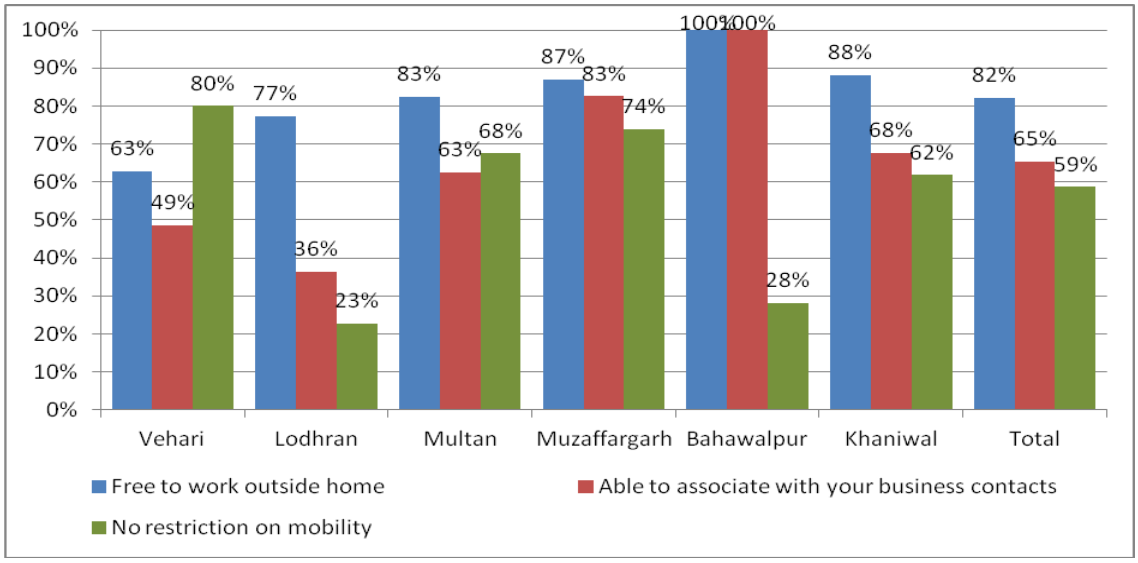
About 82 % of the respondents mentioned that they were free to work outside their homes. Two in every three respondents mentioned that they were able to associate with their business contacts without being accompanied by someone else and 59 % reported no restriction on their mobility.

Mobility pattern varies from district to district. Higher mobility and empowerment is reported from Bahawalpur where all of the respondents were had freedom to work outside their homes and were able to associate with their business contacts without a chaperon. A total of 28 % had no restriction on any type of mobility.

Mulan, Muzaffargarh and Khanewal have identical pattern in mobility and empowerment. For example, 83% to 88 % of the respondents were free to work outside their homes, 63% to 83 % were able to associate with their business contacts independently and 62% to 74 % of respondents had no restrictions on their mobility.

Lodhran seem more conservative where mobility is restricted. Though 77 % of the respondents reported freedom to workout side their homes however, only 36 % were able to associate with business contacts without a chaperon and only 23 % reported no restriction on mobility.

Figure 5.1-14: District wise mobility patterns



5.2 Artificial Insemination

Section Summary

There is an estimated requirement gap of around 8,000 Artificial Insemination Technicians (AITs) in Punjab. The Dairy Project intended to intervene in this much demanding area and therefore trained and got certified 2,032 AITs during the first phase of the project. These self-employed AITs are now earning an average of Rs.7, 027 ($70) per month against the project target of PKR 3, 000 per month. Keeping in view the success and the demand of the technicians, the project further plans to train 1,000 AITs in the extension phase of the project.

The project intends to build the capacity of AITs in managing the input supply chain that will ensure a reliable, consistent and cost effective supply of breeding products for these AITs. In order to better equip AIT workers and to establish them as entrepreneurs, trainees will also be imparted knowledge regarding basic bookkeeping, business skills and linkages to input suppliers, business development services and other value chain stakeholders.

This survey was conducted to establish the baseline of pre project interventions of the extension phase in the project area. The sample size of the survey was 204 with following district wise distribution

Table 5.2-1: District Wise Sample Size

Vehari	Lodhran	Multan	Muzaffargarh	Bahawalpur	Khanewal	Total
37	27	51	24	28	37	204

The respondents were selected based on the following criteria

- ✓ Needy (unemployed, not a regular student and from low-income family)
- ✓ Matriculate

- ✓ Social and interactive
- ✓ Age 18-40 years
- ✓ Motivated (ready to take it as his career)
- ✓ Having good communication skills (should be able to convince farmers).
- ✓ 1 technician out of 3-5 villages (can also serve commercial dairy farm)

About 90 % of AITs have completed high school or above. Out of the total there are about 13 % of AITs who are graduates or above and about 11 % have education up to middle level. None of the respondents were below middle level of education. Less than half (47 %) of the respondents are married.

Household size in these districts is 7.2 with a similar ratio of male female household members. The average age of the respondents is 27 years. A large majority (63 %) of the respondents are between 20 to 30 years of age. About 15 % are 20 years of age or younger and only 3 % are older than 40 years of age.

The average monthly household income is Rs 21,173. The main source of this income is agriculture (Rs. 10,383) followed by dairy (Rs. 4,434) and livestock (Rs. 3,359). Households also earn some income from non-agricultural sources (Rs. 2,581).

The amount of income earned from different sources varies across districts. Agriculture is the main source of household income in all districts as almost half of the household income comes from agriculture, more than one fifth of the income is from dairy and livestock contributes about 16 % to household income. On an average, per capita monthly income is Rs. 3,802.

Among the productive assets livestock and land is owned by 94 % and 83 % of the respondents respectively. More than one third of the respondents reported ownership of other items like washing machines, sewing machine etc. and 30 % reported owning Gold/silver and precious metals. Out of the total 22% reported having bank accounts and 19 % owned tractor/farm equipment. Among general or household durable assets, fan and cell phones are widely owned by respondents. Sixty eight % owned motorcycles and 55 % had bicycle ownership. Every second respondent owns television, washing machine and refrigerator. Ownership of landline phone stood at only 4 %. About 13 % reported debt out of which 90 % reported ability to pay back the debt on regular basis whereas 6% said to have another family member with debt with 92% of them paying back regularly.

On an average each household spends Rs. 25,096 per month. Almost 43 % of the household expenses are on food items whereas 11 % goes to clothing/footwear. About 8% and 9 % of the household's expenses are on education and health respectively. About 6 % each is spent on transportation and communication.

Respondent's major contribution (27 % of the total income) is from sale of milk. Similarly, respondents contribute 23 % of income from non-agricultural sources. Almost 60 % of the respondents are confident that their household is economically secure. All of the households have at least two meals per day.

About 65 % of AITs have basic and 25 % have moderate to high level of knowledge about natural matting. However, there are about 10 % of AITs who reported no knowledge about natural matting.

Similarly AITs level of knowledge about 'Artificial Insemination (AI)' has similar trends/pattern as natural matting. Overall, 63 % of the AITs reported basic level of knowledge, 23 % possessed moderate to high knowledge, 15% of the AITs did not have any knowledge regarding AI. Majority of the AITs do have some knowledge of local and imported semen. About 15 % and 13 % of the AITs do not have any knowledge about Local as well as imported semen respectively. Proportion of AITs who reported no knowledge about sexed semen is 32 %. None of the respondent ever received training in livelihood.

Almost all of the AITs know about farmers who own livestock in their village. Similarly, AITs are equally knowledgeable about owners of livestock in nearby villages. On an average, AITs know 44 farmers in their village and 30 farmers in other villages. A large majority of AITs know the service providers in the area. Almost all of the respondents know at least one AI service provider. More than half know veterinary doctor, 26 % know existing AITs and 18 % mentioned knowing veterinary technician.

5.2.1 AITs' Level of Education

Level of education of AITs is presented in table 5.2-2 below. The data suggests that about 90 % of AITS have completed high school or above. There are about 13 % of AITs who have attained education up to graduate level. These level vary from one district to the other. Almost all of the AITs from Vehari, Muzaffargarh, Bahawalpur and Khanewal have completed high school or above. Proportion of AITs with higher education (Graduation or higher) is the highest in Vehari (22 %) followed by Lodhran (19 %).

Basic education for an AIT is must to attain good skills with back reasoning for selling semen and skilled based services for Artificial insemination related to live stock. More importantly good AIT's also interacts with farmers to "book log" their breeds and monitor yields for selection and application of the type of preferred breeds the farmers intends to keep/ breed. The age is a very important factor for AIT's and especially where dairy project also provide a motorcycle for enhancing the mobility of the AIT's. At times the young population get attracted to the project for the motorcycle, but a careful selection process is required for sustainability of the AIT's in the future. In Phase 1 of the dairy project the intervention of the motorcycle proved to be very useful and supported in the sustainability of the trainees.

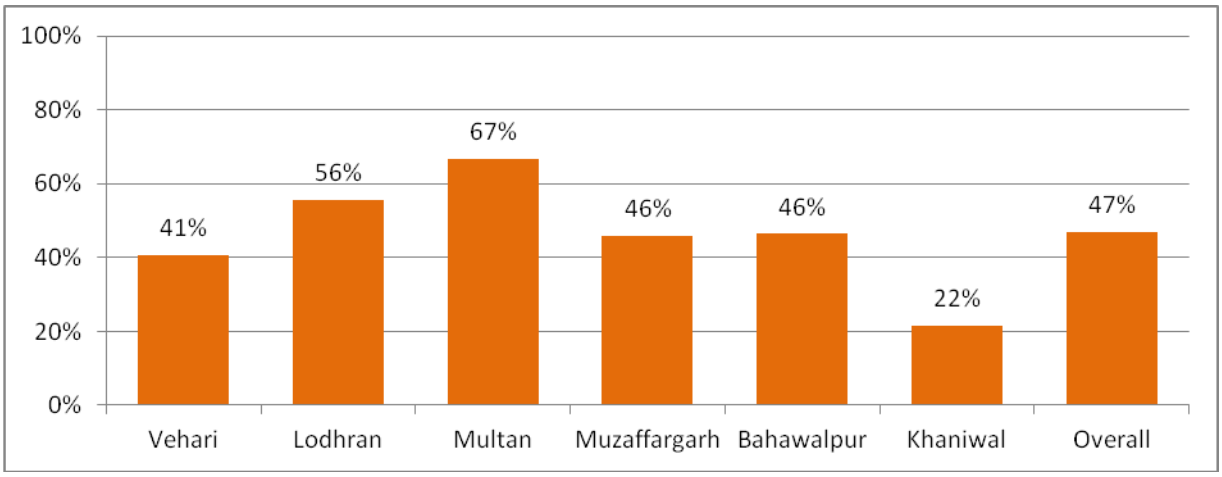
Table 5.2-2: District wise level of education

Level of Education	Vehari	Lodhran	Multan	Muzaffargarh	Bahawalpur	Khanewal	Total
Illiterate	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Up to Primary	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Middle	2.7%	25.9%	27.5%	0.0%	0.0%	0.0%	10.8%
High School	56.8%	40.7%	56.9%	50.0%	53.6%	62.2%	54.4%
Intermediate	18.9%	14.8%	9.8%	41.7%	39.3%	21.6%	22.1%
B.A/B.Sc.	21.6%	18.5%	3.9%	8.3%	3.6%	13.5%	11.3%
M.A/M.Sc.	0.0%	0.0%	2.0%	0.0%	3.6%	2.7%	1.5%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
N	37	27	51	24	28	37	204

5.2.2 Marital Status

Figure 5.2-1 below present's data on marital status of respondents. Less than half (47 %) of the respondents are married. Proportion of married respondents varies across each district. Proportion of married respondent is the highest in Multan and the lowest in Khanewal as compared to other districts.

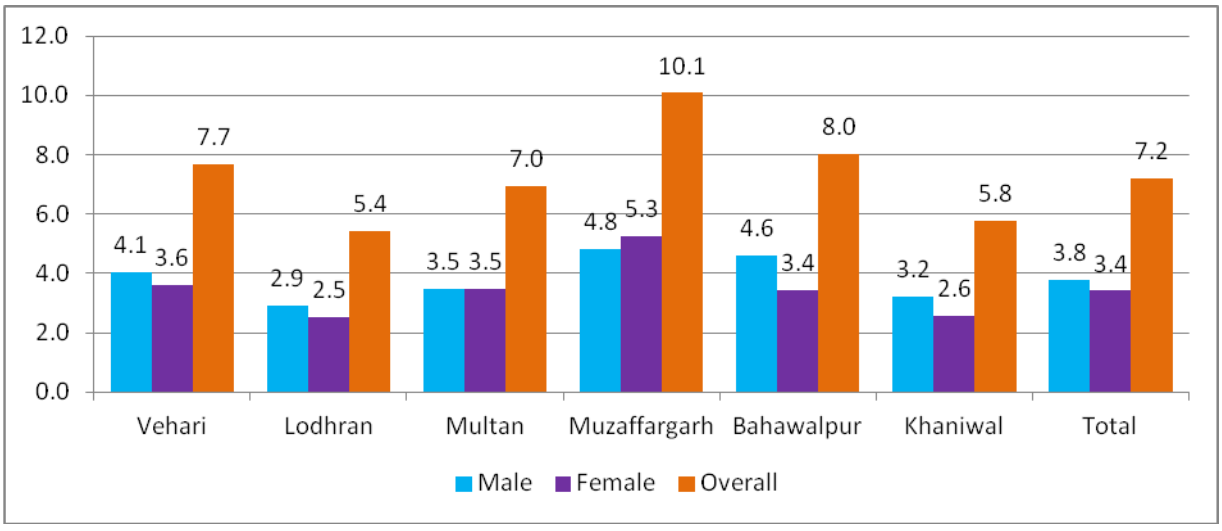
Figure 5.2-1: Marital Status



5.2.3 Average Family Size

Figure 5.2-2 presents data on household size, average number of male and female members in a household. Average household size in these districts is 7.2 with 3.8 males and 3.4 female per household. Household size is the largest in Muzaffargarh and the smallest in Lodhran.

Figure 5.2-2: Average Male Female Distribution in households



5.2.4 Respondent Age Group

The average age of the respondents is 27 years with the oldest average for Multan (30 years) and the youngest (25 years) from Khanewal as compared to other districts.

A large majority (63 %) of the respondents are between 20 to 30 years of age. About 15 % are 20 years of age or younger and another 3 % are older than 40 years. Table 5.2-3 provides district wise details on the age groups.

Being a professional AIT is a very good profession for self-employment. The younger generation in the rural context do prefer government service in case they want to go away from farming but once established as a skill based entrepreneur, where there is a huge potential in the livestock sector .currently 8000 additional AIT's are required in the target region which needs to be trained.

Table 5.2-3: Distribution of Age groups

Age Group	Vehari	Lodhran	Multan	Muzaffargarh	Bahawalpur	Khanewal	Total
17 – 20	18.9%	22.2%	3.9%	20.8%	17.9%	13.5%	14.7%
20 – 30	64.9%	66.7%	58.8%	54.2%	60.7%	73.0%	63.2%
30 – 40	10.8%	11.1%	31.4%	25.0%	21.4%	10.8%	19.1%
40 – 50	5.4%	0.0%	5.9%	0.0%	0.0%	2.7%	2.9%
50 – 60	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
60+	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
Mean	26.8	25.3	29.8	26.1	25.3	24.8	26.7
N	37	27	51	24	28	37	204

5.2.5 Respondent Household Income

The average monthly household income is Rs 21,173 in the project area. It is highest in Bahawalpur (Rs. 34,268) and the lowest in Muzaffargarh (Rs. 12,896). The main source of income is agriculture (Rs. 10,383) followed by dairy (Rs. 4,434) and livestock (Rs. 3,359). A portion of income is from non-agricultural sources (Rs. 2,581).Table 5.2-4 below gives district and source wise breakdown of the household income.

Table 5.2-4: Household Income

District	Household Income	Dairy	Agriculture	Livestock	Other
Vehari	18,636	4,135	5,784	3,405	3,297
Lodhran	21,593	4,148	10,704	4,148	2,593
Multan	20,637	4,600	10,475	3,220	2,343
Muzaffargarh	12,896	3,313	6,375	2,208	1,000
Bahawalpur	34,268	3,125	16,929	8,107	6,107
Khanewal	19,324	6,432	12,270	81	541
Total	**21,173**	**4,434**	**10,383**	**3,359**	**2,581**

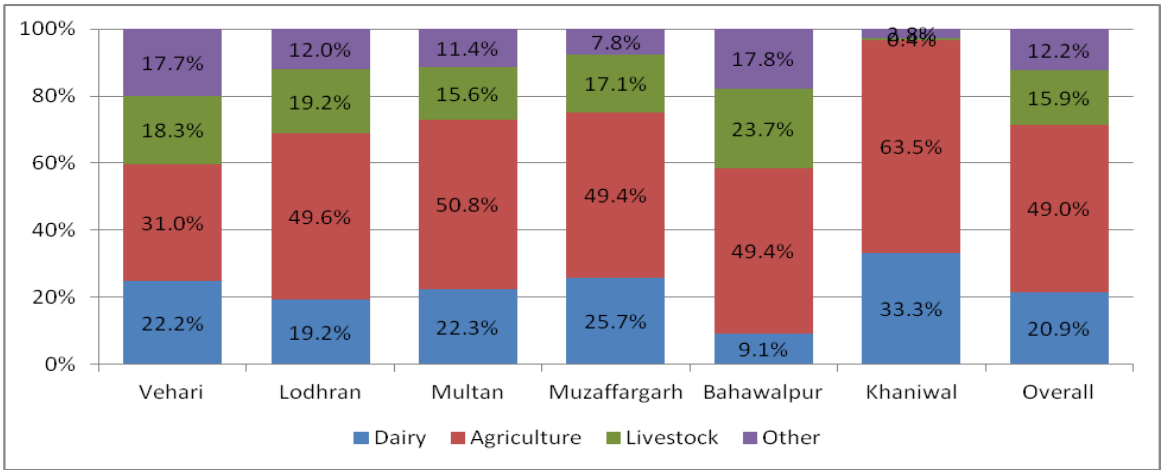
Figure 5.2-3 presents data on percentage contribution of each source to the overall household income. Agriculture is the main source of income followed by dairy livestock and other sources respectively Amongst the districts agricultural contribution to the household

income is highest in Khanewal 63% followed by, Multan, Lodhran, Muzaffargarh, Bahawalpur and Vehari.

Dairy's share in household is the highest (63 %) in Khanewal among all districts and livestock's contribute 24 % to household income in Bahawalpur which is the highest contribution by livestock among all districts.

The large percentage of household income contribution from dairy and livestock re-confirms the potential of AIT's. The AIT's from these households if given good training as AIT's can actually serve the neighborhood community farmers and generate income, but will also help and add value to their own livestock.

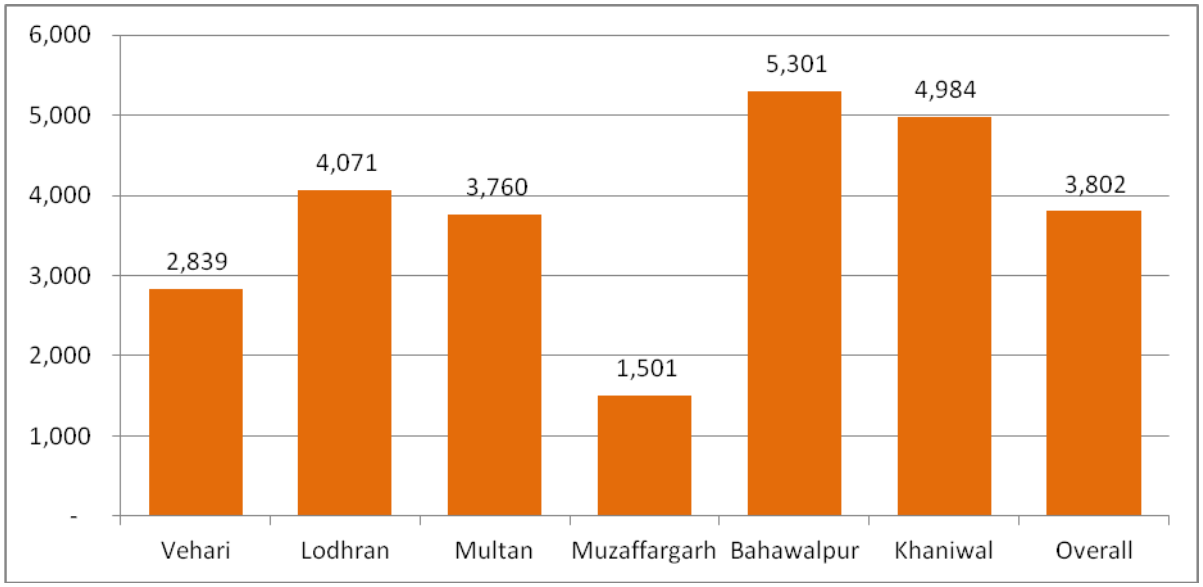
Figure 5.2-3: %age contribution to income by source



5.2.6 Per Capita Household Income

On average, per capita monthly income is Rs. 3,802 in the project area. Per capita income varies across districts which is the highest (Rs. 5,301) in Bahawalpur and the lowest (Rs. 1,501) in Muzaffargarh. Figure 5.2-4 below gives district wise breakdown of per capita income.

Figure 5.2-4: Per Capita Household Monthly Income by district



5.2.7 Possession of Productive Assets

Among the productive assets listed below, livestock and land is owned by 94 % and 83 % of the respondents. More than one third of the respondents reported ownership of other items such as washing machines, sewing machine etc. A total of 30 % reported owning Gold/silver and other precious metals. Twenty two percent reported having bank account and 19 % owning tractor and farm equipment.

Ownership of productive assets vary from one district to the other. Respondents from all districts reported owning livestock except Vehari where three in four households own livestock. Everyone in Khanewal and more than 90 % in Lodhran and Multan reported ownership of land or real estate. More than half of the respondents in Vehari reported ownership of land which is the lowest amongst all districts. Gold/silver is owned by 54 % in Bahawalpur which is the highest of all districts followed by 44 % in Lodhran. Banks accounts are most commonly reported from Lodhran (67 %) followed by Vehari (27 %).

Table 5.2-5: Households owning productive assets

Assets	Vehari	Lodhran	Multan	Muzaffargarh	Bahawalpur	Khanewal	Overall
Savings certificates	5.4%	0.0%	0.0%	0.0%	7.1%	0.0%	2.0%
Cash savings	18.9%	14.8%	0.0%	12.5%	7.1%	0.0%	7.8%
Bank accounts	27.0%	66.7%	19.6%	4.2%	17.9%	0.0%	21.6%
Gold, silver and precious metals (including jewelry)	27.0%	44.4%	29.4%	12.5%	53.6%	18.9%	30.4%
Livestock	75.7%	96.3%	100.0%	100.0%	100.0%	94.6%	94.1%
Land/real estate	56.8%	92.6%	90.2%	79.2%	78.6%	100.0%	83.3%
Tractor/farm equipment	5.4%	11.1%	19.6%	8.3%	39.3%	29.7%	19.1%

Other tools (e.g. sewing machine, washing machine, carpentry tools)	40.5%	33.3%	31.4%	70.8%	32.1%	16.2%	35.3%
N	37	27	51	24	28	37	204

5.2.8 Household General Assets

Among general or household assets, fan and cell phones are widely owned by respondents. Sixty eight percent own motorcycles and 55 % own bicycles. Every second respondent owned a television, washing machine and refrigerator. Ownership of landline phone is only 4 %. Ownership of household assets varies across districts except fan and cell phone. More than 53 % of respondents in Vehari, Lodhran, Multan and Khanewal owns refrigerator but on the other hand only 29 % to 39 % of respondents in Muzaffargarh and Bahawalpur respectively reported ownership of refrigerator. Ownership of TV is the highest in Muzaffargarh (79 %) among all districts and the lowest in 39 % in Bahawalpur. Ownership of motorcycle is the highest (89 %) in Bahawalpur among all districts followed by Vehari (87 %) but the lowest (25 %) in Muzaffargarh. Three in four respondents own radio in Lodhran but surprisingly none or negligible proportion of the respondents reported radio ownership from Muzaffargarh, Khanewal and Multan.

Table 5.2-6: Ownership of general Assets

General Assets	Vehari	Lodhran	Multan	Muzaffargarh	Bahawalpur	Khanewal	Total
Fan	100.0%	100.0%	98.0%	100.0%	89.3%	97.3%	97.5%
Refrigerator	56.8%	59.3%	52.9%	29.2%	39.3%	56.8%	50.5%
TV with Dish Antenna	16.2%	37.0%	31.4%	4.2%	10.7%	16.2%	20.6%
TV without Dish Antenna/Cable	35.1%	25.9%	21.6%	75.0%	28.6%	21.6%	31.9%
Radio	21.6%	66.7%	2.0%	33.3%	0.0%	0.0%	17.2%
Land line phone	5.4%	14.8%	2.0%	0.0%	3.6%	0.0%	3.9%
Cell phone	97.3%	96.3%	96.1%	100.0%	100.0%	100.0%	98.0%
Washing machine	62.2%	44.4%	47.1%	37.5%	35.7%	70.3%	51.0%
Bicycle	45.9%	74.1%	21.6%	95.8%	57.1%	70.3%	55.4%
Motorcycle	86.5%	63.0%	74.5%	25.0%	89.3%	56.8%	68.1%

5.2.9 Respondent & Household Debt

Out of the total 13 % respondents reported having debt. Of those who reported debt, 90 % reported ability to pay back the debt on regular basis. This percentage of debt varies among districts e.g. 27% of the respondents belonged to Vehari which is the highest among all districts and none of the respondents reported any debt from Khanewal.

In response to the question whether any other household member is under debt, only 6 % reported debt. Twenty seven % of respondents from Vehari and about 3 % each from

Bahawalpur and Khanewal reported that any member of their household is under debt. No debt reported from Lodhran, Multan, and Muzaffargarh.

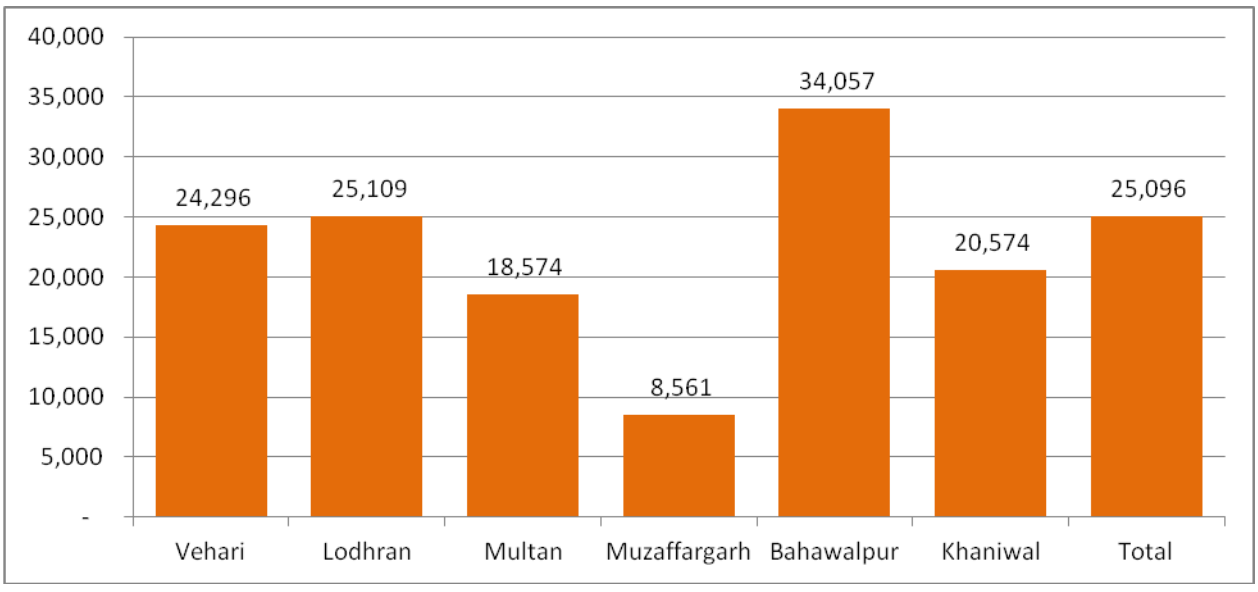
Table 5.2-7: respondents having debt

Question	Vehari	Lodhran	Multan	Muzaffargarh	Bahawalpur	Khanewal	Total
% have debt	27.0%	14.8%	15.7%	12.5%	7.1%		13.2%
Able to make regular repayment	100.0%	50.0%	100.0%	66.7%	100.0%		88.9%
Everyone in household able to make regular repayment?	100.0%	0.0%	62.5%	33.3%	50.0%		63.0%
Anyone other household member owe a loan (Debt) ?	27.0%				3.6%	2.7%	5.9%
Do they make regular repayment?	100.0%				100.0%	0.0%	91.7%

5.2.10 Household Expense

On an average each household spends Rs. 25,096 per month. Respondents from Bahawalpur reported the highest monthly expenses among all districts and on the other hand, households in Muzaffargarh reported the lowest monthly expenses. Table 5.2-8 below presents household monthly expenditures.

Table 5.2-8: Average Household Monthly Expenses



A major portion i.e. 43 % of the household expenses are on food followed by 11 % on clothing/footwear. About 8% and 9 % of the household expenses go to education and health respectively. About 6 % each is spent on transportation and communication.

Proportion of household expenses spent on each item varies among districts. More than half of the household expenses in Multan are spent on food items which the highest among all

district and on the other hand, 35 % of the household's expenses go to food item in Khanewal. Respondents in Lodhran spend about 14 % each on Health, Education and Clothing and are the highest proportion among all districts. Table 5.2-9 gives the breakdown of expenses against each category and districts.

Table 5.2-9: Distribution of Expenses by category

Item	Vehari	Lodhran	Multan	Muzaffar garh	Bahawal pur	Khanewal	Overall
Food, water	42.4	37.6	51.4	46.1	41.7	34.6	42.9
Health	6.2	14.0	6.8	9.1	4.3	12.1	8.6
Education	8.3	14.8	5.4	9.0	4.0	9.2	8.1
Clothing / footwear	11.1	14.7	10.0	8.0	8.6	14.7	11.4
Fuel and electricity	7.1	7.3	6.5	9.3	3.5	9.8	7.2
Transport	5.5	4.0	9.4	8.5	3.3	5.2	6.2
Communication (phone, etc.)	6.4	3.4	7.1	10.0	3.3	5.1	5.8
Housing (rent & other costs)	1.9	2.1	2.2	0.0	0.0	5.1	2.1
Miscellaneous	11.0	2.1	1.2	0.0	31.3	4.1	7.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 5.2-10 gives a breakdown of expenses in PKR

Table 5.2-10: Household expenses in PKR

Item	Vehari	Lodhran	Multan	Muzaffar garh	Bahawal pur	Khanewal	Total
Food, water	6,906	7,778	6,153	3,833	13,232	5,246	7,172
Health	2,023	2,778	1,069	756	1,250	1,871	1,639
Education	2,545	2,833	1,346	756	1,636	1,830	1,877
Clothing / footwear	2,722	2,685	1,518	678	2,768	2,723	2,224
Fuel and electricity	1,704	1,472	1,008	767	1,020	1,695	1,297
Transport	1,975	1,531	1,561	711	1,077	1,403	1,390
Communication (phone, etc.)	1,520	1,331	1,226	1,061	1,037	1,265	1,239
Housing (rent & other costs)	1,900	2,417	1,025	-	-	2,963	1,996
Miscellaneous	3,000	2,283	3,667	-	12,037	1,579	6,262
Overall	24,296	25,109	18,574	8,561	34,057	20,574	25,096

The table above shows expense related to food and water, where it must be noted that water expense is not drinking water, instead it is water for agriculture through motorized tube wells, or water tax paid to irrigation department for irrigation water- The drinking water in rural areas is 99.9% used from hand pumps and tube wells.

5.2.11 Respondent Contribution in Household Income

Respondent's major contribution to the household income is from the Sale of Milk which contributes 27 % to the household income followed by 23 % from non-agricultural sources. This value across districts e.g. in Bahawalpur 71 % of the household income comes from the sale of milk followed by 48 % in Multan. On the other hand there is no contribution to household income from sale on milk in Khanewal. In addition respondents contribute about 31 % of the household income from agriculture in Vehari, Multan, Muzaffargarh and Bahawalpur. However, there is a minimal contribution by respondent to household agricultural income in Lodhran and Khanewal.

Table 5.2-11 below gives sector and district wise details on the contribution to household income.

Table 5.2-11: Respondents' Contribution to Household Income by Source and District

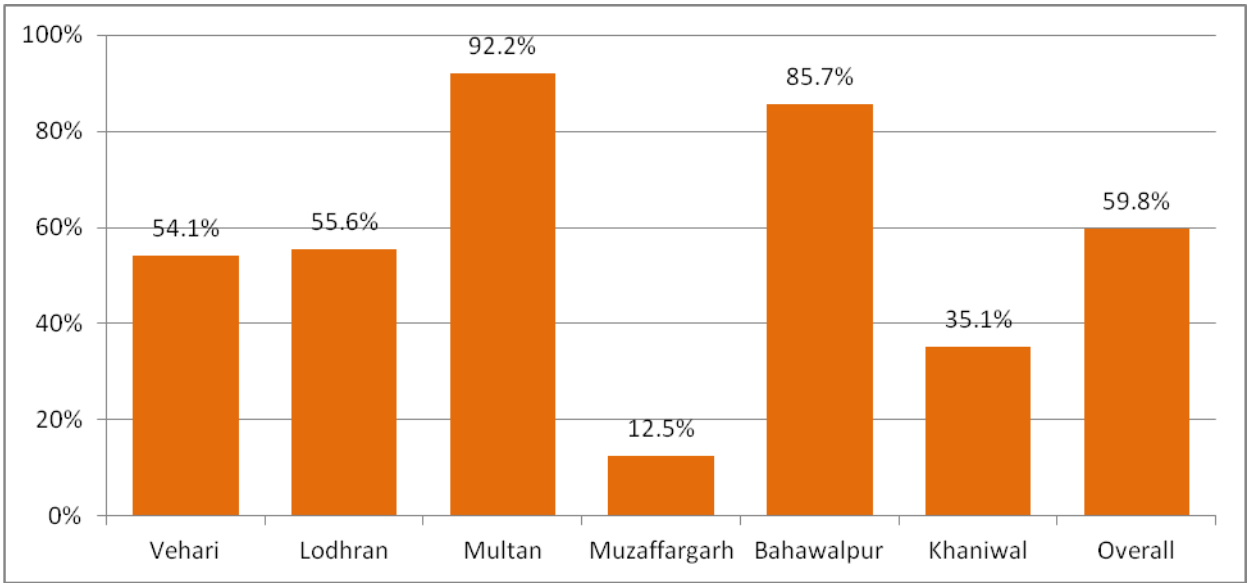
	Sale of milk		Agriculture		Non-Agriculture income	
District	Income (Rs)	Contribution (%)	HHD income	Contribution (%)	HHD income	Contribution (%)
Vehari	5,081	23.4%	5,419	31.2%	4,622	45.0%
Lodhran	4,333	14.5%	13,704	1.6%	4,333	0.0%
Multan	3,933	47.9%	5,510	29.9%	2,235	11.8%
Muzaffargarh	3,729	38.5%	5,958	30.8%	2,500	11.7%
Bahawalpur	3,125	70.9%	16,929	32.1%	13,143	26.1%
Khanewal	7,351	0.0%	12,378	2.6%	622	0.0%
Overall	4,679	26.6%	9,444	18.7%	4,181	22.7%

The contribution of sale of dairy products, milk etc. are pre-intervention and as per dairy project phase-1 results there has been 15% to 18% increase in dairy and milk related contribution and in some case much higher contribution is seen.

5.2.12 Household's Economic Condition

Regarding the perception of economic condition and economic security 60 % of the respondents were confident that their households are economically secure. This perception varies among districts. More than 92 % of respondents from Multan believed they were economically secure as compared to only 13 % in Muzaffargarh. Figure 5.2-5 below shows the perception of the respondents regarding their economic stability.

Figure 5.2-5: Perception regarding economic security



Note: The household economic situation in Muzaffargarh is shown at 12.5%. Please also note to fact that Muzaffargarh district has been victim of floods for the past 5 years on regular basis thus the other factors also apply on these percentages.

5.2.13 Household Nutrition Status

All of the households have at least two meals a day. All respondents from Vehari, Muzaffargarh and Khanewal reported taking meals two times a day.

Table 5.2-12: Frequency of meals per day

District	One	Two	Three	Four or Greater	Total
Vehari	0.0%	100.0%	0.0%	0.0%	100.0%
Lodhran	0.0%	66.7%	33.3%	0.0%	100.0%
Multan	0.0%	50.0%	50.0%	0.0%	100.0%
Muzaffargarh	0.0%	100.0%	0.0%	0.0%	100.0%
Bahawalpur	0.0%	75.0%	25.0%	0.0%	100.0%
Khanewal	0.0%	100.0%	0.0%	0.0%	100.0%
Overall	**0.0%**	**91.5%**	**8.5%**	**0.0%**	**100.0%**

5.2.14 Knowledge Regarding Natural Mating and Artificial Insemination

The survey revealed that 65 % of AITs have basic and 25 % have moderate to high level of knowledge about natural matting. However, there about 10 % of AITs who had no knowledge on about natural matting. This knowledge level also varies from one district to the other e.g. more than 39 % of the AITs from Bahawalpur and almost 38 % from Muzaffargarh reported moderate to high level of knowledge about natural matting. Level of knowledge in these two districts is the highest among all districts. The proportion of AITs with no knowledge is the highest in Muzaffargarh (33 %) among districts followed by Vehari (24 %). This is interesting to know that level of knowledge about natural matting varies among AITs

with Muzaffargarh (33 % know nothing vs 38 moderate to high level of knowledge and both proportions are highest among districts).

AITs level of knowledge about 'Artificial Insemination' has the similar trends/pattern as natural matting. Overall, 63 % of the AITs reported basic level of knowledge and 23 % has moderate to high knowledge about artificial insemination. However, there are 15 % of the AITs who did not have any knowledge about artificial insemination.

All of the AITs from Khanewal and Bahawalpur reported at least basic knowledge about artificial insemination. Again, level of knowledge among AITs within Muzaffargarh district varies. On one hand, 28 % of the AITs from Muzaffargarh reported moderate to high level of knowledge (the highest among all districts) and on the other hand, 38 % from the same district reported no knowledge at all (which is again the lowest among all districts).

The artificial insemination has been in practice in the target region since few decades, whereas the natural mating process as being more "Natural/ organic/ or ethical" has also been practiced side by side. There is more Artificial insemination for cows, compared to buffaloes. The cows though producing more milk on the average have less milk fat whereas the buffaloes with low milk yield has more milk fat which is "in rural perspective" seen as more nutritious. It is common scene that a farmer would sell cow milk and retain more of buffalo's milk for self-use. Cross breeding of cows is getting popular with imported breed semen as the offspring produce at least 5 to 10 liters of more milk then the traditional cow breed.

The table 5.2-13 below presents the respondents' knowledge about 'Natural Matting' and 'Artificial Insemination in different districts.

Table 5.2-13: Level of knowledge about Natural Matting and Artificial Insemination

	Vehari	Lodhran	Multan	Muzaffar garh	Bahawal pur	Khanewal	Overall
Natural Matting							
None	24.3%	3.7%	3.9%	33.3%	-	-	9.8%
Basic	48.6%	74.1%	66.7%	29.2%	60.7%	100.0%	65.2%
Moderate	8.1%	14.8%	9.8%	25.0%	35.7%	-	13.7%
High	18.9%	7.4%	19.6%	12.5%	3.6%	-	11.3%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Artificial Insemination							
None	24.3%	22.2%	11.8%	37.5%	-	-	14.7%
Basic	48.6%	51.9%	66.7%	25.0%	71.4%	97.3%	62.7%
Moderate	13.5%	25.9%	17.6%	25.0%	25.0%	2.7%	17.2%
High	13.5%	-	3.9%	12.5%	3.6%	-	5.4%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Regarding knowledge about the types of artificial insemination i.e. local Semen, Imported Semen and Sexed Semen the survey revealed that AITs have some knowledge of local and

imported semen. About 15 % and 13 % of the AITs do not have any knowledge about Local as well as imported semen respectively. Proportion of AITs who had no knowledge about sexed semen is 32 %, this number is almost double as compared to the other categories. The table below gives type and district wise breakdown of the knowledge levels.

Table 5.2-14: Level of knowledge about type of Artificial Insemination

	Vehari	Lodhran	Multan	Muzaffar garh	Bahawal pur	Khanewal	Overall
Local Semen							
None	29.7%	14.8%	13.7%	33.3%	3.6%	-	15.2%
Basic	67.6%	85.2%	68.6%	16.7%	53.6%	97.3%	67.6%
Moderate	-	-	3.9%	41.7%	42.9%	2.7%	12.3%
High	2.7%	-	13.7%	8.3%	-	-	4.9%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Imported Semen							
None	14.3%	25.9%	25.5%	5.9%	-	-	13.3%
Basic	60.7%	66.7%	62.7%	17.6%	71.4%	94.6%	66.5%
Moderate	14.3%	7.4%	9.8%	64.7%	28.6%	2.7%	16.5%
High	10.7%	-	2.0%	11.8%	-	2.7%	3.7%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Sexed Semen							
None	64.3%	66.7%	39.2%	23.5%	-	-	31.9%
Basic	17.9%	11.1%	56.9%	29.4%	53.6%	94.6%	48.9%
Moderate	14.3%	18.5%	3.9%	47.1%	42.9%	2.7%	17.0%
High	3.6%	3.7%	-	-	3.6%	2.7%	2.1%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

5.2.15 Livelihood Training Received

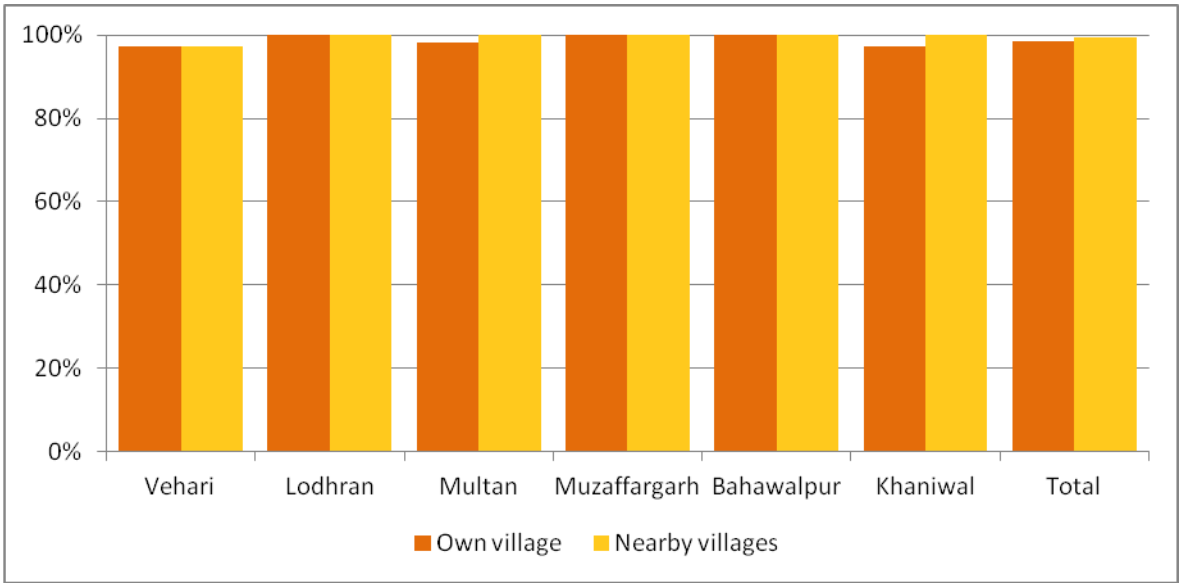
None of the respondent ever received training on livelihood.

It may be noted that Pakistan has been a center of NGO's and development agencies for over two decades for various kind of livelihood trainings to ultra-poor, but the selected target groups were not engaged- More over the target groups of the dairy projects engages dairy related population which are not ultra-poor, but the interventions creates a dairy value chain where the ultra-poor gets engaged as workers and are beneficiaries due to increase in the diary pie in rural context. There are more than 50 other small industries and economic opportunities grow with dairy like fodder, feed mix, tractors, silage making, mil carriers, vaccinators, farm workers, silage cutters, farm equipment, farm equipment maintenance workers etc. etc.

5.2.16 Information about Livestock Owners in Village (%)

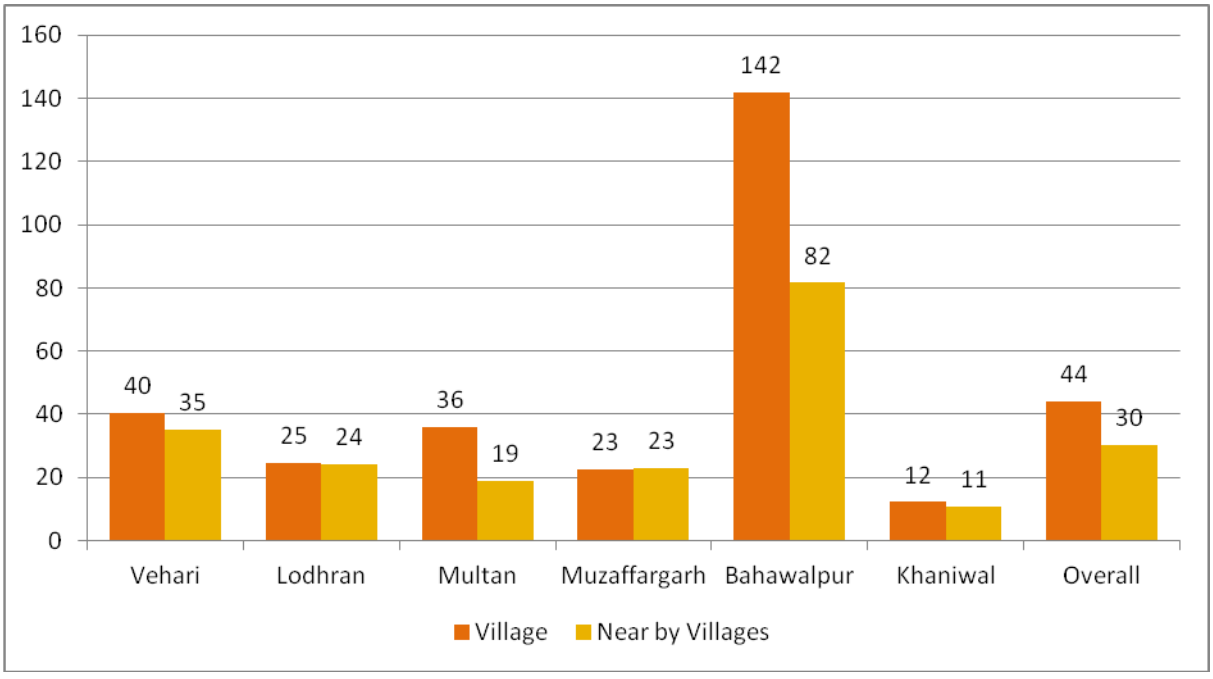
Almost all of the AITs had knowledge about the farmers who own livestock in the village (Figure 5.2-6). Additionally the AITs possessed equal knowledge about owners of livestock in nearby villages. Figure 5.2-6 below gives district wise details.

Figure 5.2-6: Respondents knowledge about livestock owners in own and nearby villages



On average, AITs know 44 farmers in the village and 30 farmers in other villages. AITs in Bahawalpur knows much more farmers in the same village as well as in others villages compared to other districts. In Bahawalpur, an AITs knows 142 farmers in his village and 82 in other villages. In Khanewal, AITs know only 12 farmers in their villages and 11 farmers in nearby villages.

Figure 5.2-7: Mean number livestock owners in village and nearby villages



5.2.17 Information about AI Services

A large majority of AITs know the service providers in the area. Almost all of the respondents knew at least one AI service provider in their area. More than half know veterinary doctors, 26 % know AITs and 18 % mentioned veterinary technician. But at the same time it may be

noted for context that the geographical coverage of AIT's and veterinary services are very thinly spread and quality services are very scarce. (Pakistan has more than 56 Million Animal heads with 67% in the province of Punjab).

Table 5.2-15: Information on AI Services

District	Veterinary Doctor	Veterinary Technician	Veterinary Officer	AIT	Don't Know / Refuse to Answer
Vehari	56.8%	21.6%	18.9%	8.1%	10.8%
Lodhran	51.9%	14.8%	3.7%	40.7%	0.0%
Multan	82.4%	9.8%	0.0%	7.8%	0.0%
Muzaffargarh	66.7%	12.5%	0.0%	4.2%	16.7%
Bahawalpur	3.6%	53.6%	0.0%	42.9%	0.0%
Khanewal	56.8%	2.7%	0.0%	56.8%	0.0%
Overall	**56.4%**	**17.6%**	**3.9%**	**25.5%**	**3.9%**

5.3 Farmers

Section Summary

Almost 70 % of the rural households are involved in milk production, yet the prevalence of best and modern farm practices is negligible amongst the majority of small producers. These best practices are easy and cost effective to implement resulting in increased yield of up to 15 % productivity. It is also proven that the best practices have increased potential with special emphasis on six basic skills including free access to water, farm fodder production and conservation, animal nutrition, regular deworming and vaccination, better quality AI for breeding, shade, open penning and non-shortage of fodder.

The absence of these best practices is due to the lack of awareness and guidance to these dairy households. Small in size and fragmented, it remains unfeasible for the private sector to allocate resources towards technical awareness as the return on investment is very less as it was profitable for input companies to spend resources in targeting only large farmers.

To overcome the above mention causes of low productivity of dairy products, the diary project trained approximately 9,000 farmers on best practices in the first phase of the project. Around 85% of the farmers adopted at least one best practice which resulted in increased productivity and income to the tune of 19 % in average milk yield and about $60 per farmer per month.

The Dairy Project in its extension phase will upgrade 100 commercially viable dairy farms to become “Model Farms”. The up gradation will be on cost share basis, under a pre-negotiated agreement giving free access to local farmers’ communities to farm and its training services. The project plans to set up such farms in 100 villages; where dairy producers from surrounding 6-10 villages will be given one-day training on the basic dairy farm practices. The database of beneficiaries will be maintained for updates and information dissemination. Project’s pilot activity in the previous phase has provided credence to this approach.

This survey was conducted to establish a pre project interventions of phase 2 of Dairy Project in the targeted districts. The sample size selected was 633 with following district wise distribution of the sample.

Table 5.3-1: District wise sample distribution

Vehari	Lodhran	Multan	Muzaffargarh	Bahawalpur	Khanewal	Total
127	81	121	83	93	128	633

The respondents were selected based on the following criteria

- Minimum age 18 years
- Should have farm animals
- Seeking to start their careers as farm managers
- Want to establish their own farm

Almost one in four respondents have never been to school, 14% completed primary level, 43 % completed middle or high school and a few (8 %) completed at least graduation. Overall, three in four farmers are married. Only 6 % of the farmers are of 20 years or younger. Three in four farmers are between 20 to 40 years of age. There are 10 % of the farmers who are 50 years or older.

Household size in these districts is 6.9. The average monthly household income is Rs 24,520. The main source of household income is agriculture (Rs. 11,583) followed by dairy (Rs. 5,014) and livestock (Rs. 4,084). The amount of income a household receives from non-agricultural sources is Rs. 3,839. On average, per capita monthly income is Rs. 4,262.

More than 94 % of respondents own livestock and 80 % reported ownership of Land or real estate. About 41 % own at least one of sewing machine, washing machine or/and carpentry tools. Proportion of households reported ownership of Gold/Silver and/or precious metals etc. is 28 %. One in four farmers has bank account and only 12 % have cash savings. Ownership of fan and cell phone is almost universal as more than 95 % of farmers reported ownership of these items. More than 71 % respondents own motorcycle and 59 % own bicycle. Sixty six percent own television and more than half reported ownership of washing machine. Ownership of radio is reported by 16 % and availability of landline phone is very low (4 %). A small proportion (14 %) of farmers reported debt. However, 82 % are in a position to payback this debt. Almost 8 % farmers reported that at least one household member was in debt however 78 % of respondents are confident that other members had the ability payback this loan.

On an average, a household has Rs.19,516 monthly expenditures. The major expense at household level is on food items on which almost two-fifths of the expenses incurred, 11% of expenses are on clothing and footwear followed by education (9 %) and health (9 %). Households spend 7% on fuel and electricity, 6 % on transport and 4 % communication.

Respondents' contribution to household income from sale of milk is 38 % of the total income. They are also contributing a significant portion to household income from agricultural as well as non-agricultural sources i.e. 43% and 62 % respectively.

About 67 % of the farmers are confident that their households are economically secure. All farmers from surveyed districts reported having meals twice a day. About 73 % of the farmers are land owners and 12 % are both tenant and landless (Cultivating land on rent). On average, farmers cultivate 5.8 acres of agricultural land out of which more than one third of the cultivated land is used for fodder.

Overall, 60 % of the farmers own pure breed (Sahiwal/Cholistan) farm animals, 54 % own local breed and 25 % own cross bred (European) farm animals. During summer season, 90 % of the farmers are use cultivated fodder for farm animals. The second most commonly used fodder is 'Khal' (62 %) followed by dried fodder (42 %). About one-third are using Wanda and 19 % purchase fodder during summer season. There is no variation is use of fodder between summer and winter seasons.

About 79 % of the farmers know animals' nutrition requirements. The basic health/vaccination service providers for farm animals available to farmers are; a local trained person (44 %) and farmers themselves (31 %). Proper basic health/vaccination services are only available to 7% of the surveyed population.

Farmers reported use of natural matting (55 %) and artificial insemination (45 %) for the breading of farm animals. None of the farmers reported use of embryo transfer for breeding.

According to 58% farmers the main artificial insemination service provider available to framers in their area are the AITs, 17% access veterinary hospital, 11% AI clinic and 10% AI center. About 59 % farmers were 'somewhat satisfied' and only 9 % were very satisfied. Almost one in three farmers were not satisfied with the animal health services available in their area. Farmers seem more satisfied with breeding services than basic health services in their area. Three in four farmers expressed some level of satisfaction with the breeding of animal services. However, 24 % of farmers expressed their dissatisfaction with the breeding services available in the area

Farmers' knowledge about vaccination, natural matting and de-worming is wide spread. A large majority of farmers also reported knowledge of Vanda feeding and artificial insemination (using local as well as imported semen). A total of 81% farmers are de-worming and 84% are vaccinating their animals as best farm practices. About 58 % of farmers each are using artificial insemination and feeding vanda to farm animals.

The most important reason mentioned for not using all types of best farm practices is that these practices are too expensive. The second most important reason is that 'not enough information' is available about these farm practices. Few farmers also mentioned that they did not have enough time to use these farm practices.

5.3.1 Farmer's Level of Education

The survey revealed that almost one in four farmers have never been to school, 14% completed primary level, 43 % completed middle or high school and a few (8 %) completed graduation. Farmers' educational background varies among districts. In Multan, more than half of the farmers have never been to school and almost none is a graduate or attained higher degree. All of the farmers from Bahawalpur has been to school and have completed at least primary school. Table 5.3-2 below present data on farmers' educational qualifications.

It is a general trend that affluent farmers with more than 10 dairy animals, with own house and some land holding keeps their sons at hand, as they see them as future farm leaders. With modern times education is encouraged where we see a trend of attaining basic high school is there but beyond that most farmers do not study beyond that. There are many cases where the daughters of affluent farmers are more educated then their sons.

Table 5.3-2: Distribution of Respondents by Level of Education

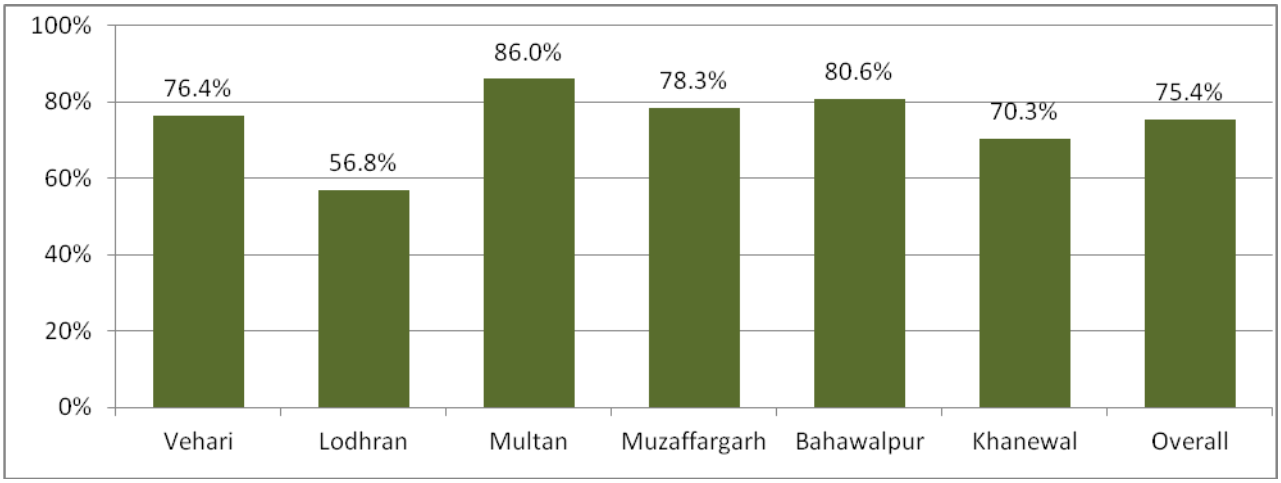
Level of Education	Vehari	Lodhran	Multan	Muzaffargarh	Bahawalpur	Khanewal	Total
Illiterate	26.8%	3.7%	54.5%	12.0%	0.0%	28.1%	23.5%
Up to Primary	18.9%	12.3%	14.0%	10.8%	10.8%	15.6%	14.2%
Middle	24.4%	23.5%	9.9%	24.1%	14.0%	25.8%	20.2%
High School	15.0%	25.9%	15.7%	16.9%	48.4%	21.9%	23.1%
Intermediate	7.1%	21.0%	5.0%	19.3%	7.5%	6.3%	10.0%
B.A/B.Sc.	3.9%	12.3%	.8%	15.7%	14.0%	0.0%	6.6%

M.A/M.Sc.	2.4%	1.2%	0.0%	1.2%	5.4%	1.6%	1.9%
Others	1.6%	0.0%	0.0%	0.0%	0.0%	.8%	.5%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
N	127	81	121	83	93	128	633

5.3.2 Marital Status - Farmers

Overall, three in four farmers are married. Proportion of married farmers is the highest in Multan (86 %) and the lowest in Lodhran (57 %).

Figure 5.3-1: Marital status



5.3.3 Farmers Age Group

Average age of farmers is 35 years. Older farmers are reported from Vehari (39 years) and younger farmers are from Lodhran (30 years).Only 6 % of the farmers are of 20 years or younger. Three in four farmers are between 20 to 40 years of age. There are only 10 % of the farmers who are 50 years or older. Proportion of very young (up to 20 years of age) farmers is the highest (16 %) in Lodhran and is the lowest (2%) in Vehari. Older farmers (50 years or above) are more prevalent in in Vehari and less prevalent in Multan among all districts. Table 5.3-3 below provides details on age groups across different districts.

This trend also confirms that younger generation (primarily the sons age 20's and 30's) are helping their fathers (age in 50, s) – Where the son starts to lead the farm matters in age 30's.

Table 5.3-3: Distribution of Respondents by Age Group

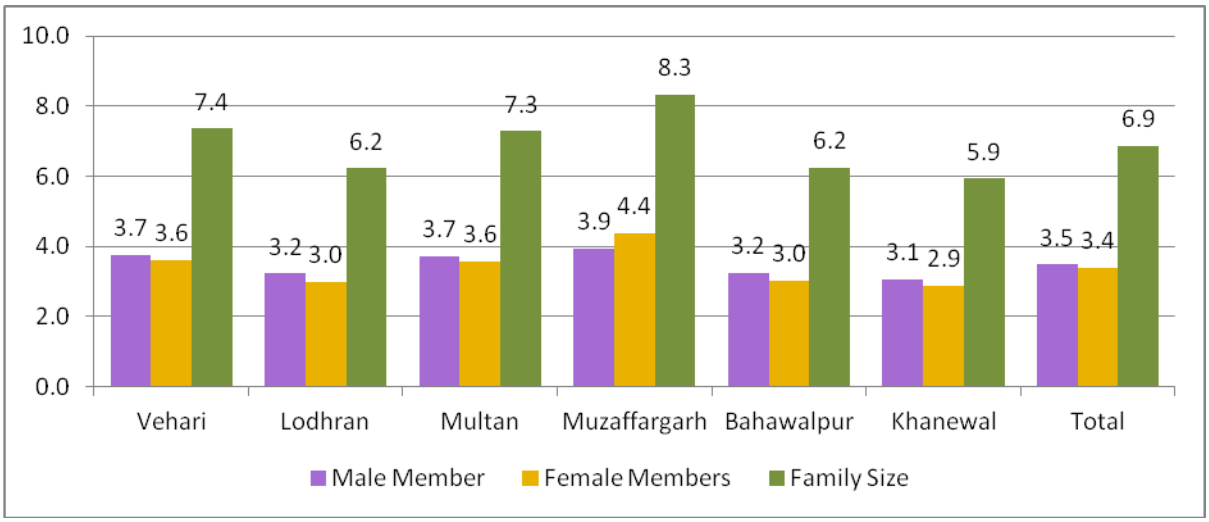
Age Group	Vehari	Lodhran	Multan	Muzaffargarh	Bahawalpur	Khanewal	Total
17 - 20	2.4%	16.0%	6.6%	3.6%	4.3%	3.1%	5.5%
20 - 30	30.7%	49.4%	30.6%	41.0%	30.1%	33.6%	34.9%
30 - 40	28.3%	16.0%	35.5%	37.3%	44.1%	22.7%	30.5%
40 - 50	18.9%	13.6%	26.4%	14.5%	16.1%	22.7%	19.4%
50 - 60	14.2%	3.7%	.8%	2.4%	4.3%	14.1%	7.3%

60+	5.5%	1.2%	0.0%	1.2%	1.1%	3.9%	2.4%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Mean (years)	39.2	29.8	35.0	32.8	34.7	37.4	35.3
N	127	81	121	83	93	128	633

5.3.4 Respondent Average Family Size

Figure 5.3-2 presents data on household size, average number of male members and average number of female members in a household. Household size in the surveyed districts is 6.9 with an average of 3.5 males and 3.4 females per household. Household size is the largest in Muzaffargarh and the smallest in Lodhran and Bahawalpur.

Figure 5.3-2: Average house hold size and male/female distribution



5.3.5 Respondent Household Income

The average monthly household income is Rs 24,520 which is highest in Bahawalpur (Rs. 34,391) and the lowest in Multan and Khanewal (Rs. 26,600). The main source of household income is agriculture (Rs. 11,583) followed by dairy (Rs. 5,014) and livestock (Rs. 4,084). The amount of income from non-agricultural sources is Rs. 3,839.

Sources of income varies across districts however agriculture is the main source of income in all districts. Dairy is the second most important source for Multan, Bahawalpur and Khanewal. Livestock is the second most important source in Vehari and Muzaffargarh. Tab. Table 5.3-4 presents data on monthly income of farmers' households. 5.3-4 below gives details on sources and income of the households.

Table 5.3-4: Average Household Income by District

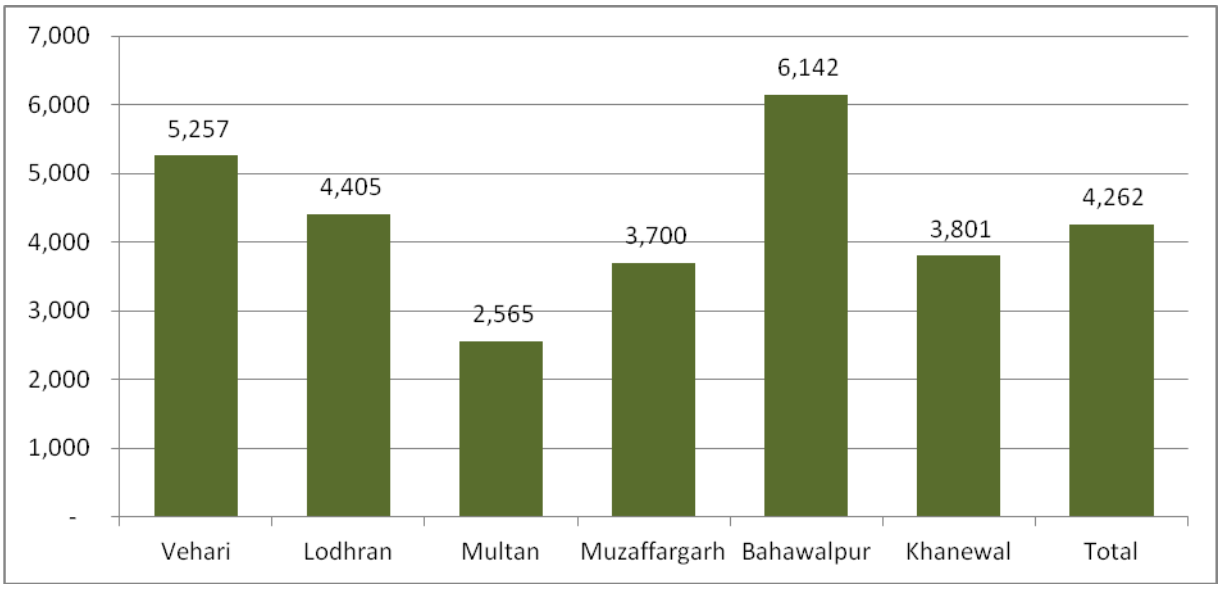
District	Household Income	Dairy	Agriculture	Livestock	Other
Vehari	26,664	4,460	11,404	6,824	3,976
Lodhran	25,969	4,895	13,056	4,531	3,488
Multan	18,579	5,364	8,225	2,493	2,498
Muzaffargarh	26,596	4,257	9,069	4,873	8,398

Bahawalpur	34,391	5,992	21,463	4,022	2,914
Khanewal	18,609	5,081	8,453	2,164	2,910
Total	24,520	5,014	11,583	4,084	3,839

5.3.6 Per Capita Household Income

Figure 5.3-3 below present's data on household monthly income per capita. On average, per capita monthly income is Rs. 4,262 which varies across districts. It is the highest (Rs. 6,142) in Bahawalpur and the lowest (Rs. 2,565) in Multan among all districts.

Figure 5.3-3: Per Capita Household Monthly Income by district



5.3.7 Household Income in Past Year

Farmers were asked to compare current household monthly income with the previous year in order to determine any change in the household income. About three-fourths of the respondents replied that there was no change i.e., present monthly income is the same as that of the last year. About 19 % reported increase in income but on the other hand, 14 % reported decline in income levels.

Almost all of the respondents from Bahawalpur reported no change in income compared to previous year. About 81 % of farmers from Multan reported same level of income as compared to previous year. However, 39 % of the farmers from Muzaffargarh reported increase in income compared to the last year. From Lodhran, 32 % reported increase, 41 % reported no change and 27 % reported decline in income compared to previous year.

In the rural context, the context related to inflation, increase in commodity prices, floods, agriculture produce etc. were not taken into account- The income levels tabulated are direct deliberations with the farmers.

Table 5.3-5: Household Income Changes in the last year

District	Increased	Stayed the Same	Decreased	Total	N

Vehari	24.4%	59.1%	16.5%	100.0%	127
Lodhran	32.1%	40.7%	27.2%	100.0%	81
Multan	10.7%	81.0%	8.3%	100.0%	121
Muzaffargarh	38.6%	57.8%	3.6%	100.0%	83
Bahawalpur	1.1%	98.9%	0.0%	100.0%	93
Khanewal	14.8%	60.2%	25.0%	100.0%	128
Overall	**19.3%**	**66.8%**	**13.9%**	**100.0%**	**633**

5.3.8 Household Productive Assets

More than 94 % of respondents reported ownership of livestock and 80 % reported owning Land or real estate. About 41 % own at least one of sewing machine, washing machine or/and carpentry tools. About 28% households reported ownership of Gold/Silver and/or precious metals. One in four farmers has a bank account and only 12 % have cash savings as well. About 62 % of farmers from Lodhran has bank account which is the highest proportion among all districts whereas almost none of the farmers in Khanewal possess any bank account.

Almost every farmer owns livestock in Khanewal, Bahawalpur and Muzaffargarh. Land ownership reported from Lodhran (95 %) is the highest among all districts followed by Bahawalpur (91 %) and the lowest in Vehari (56 %).

Tractors/farm equipment ownership is the highest in Khanewal as 46 % reported it whereas only 8 % each from Vehari and Muzaffargarh owns tractor or other farm equipment.

In the target area, 94% of respondent reported ownership of livestock, where 80% reported land ownership- It may be noted that 100% of farmers who own land also own livestock. The dairy animals are part of livelihood subsistence, food security and source of income and social status.

Table 5.3-6: Ownership of Productive Assets

assets	Vehari	Lodhran	Multan	Muzaffargarh	Bahawalpur	Khanewal	Overall
Savings certificates	1.6%	3.7%	1.7%	1.2%	17.2%	0.0%	3.8%
Cash savings	15.7%	18.5%	1.7%	26.5%	17.2%	.8%	12.0%
Bank accounts	27.6%	61.7%	9.9%	26.5%	31.2%	3.9%	24.2%
Gold, silver and precious metals (including jewelry)	33.1%	38.3%	9.9%	32.5%	64.5%	1.6%	27.5%
Livestock	85.8%	95.1%	88.4%	98.8%	96.8%	99.2%	93.5%
Land/real estate	55.9%	95.1%	81.8%	78.3%	91.4%	84.4%	79.8%
Tractor/farm equipment	7.9%	21.0%	14.9%	8.4%	46.2%	22.7%	19.6%
Other tools (e.g. sewing machine, washing machine, carpentry tools)	34.6%	46.9%	47.9%	42.2%	77.4%	7.8%	40.6%
N	127	81	121	83	93	128	633

5.3.9 Household General Assets

Table 5.3-7 below presents data on ownership of durable assets. Ownership of fan and cell phone is almost universal as more than 95 % of farmers reported ownership these items. More than 71 % respondents own motorcycle and 59 % own bicycle, 66% own television and more than half reported ownership of washing machine.

Ownership of radio is reported by 16 % and availability of landline phone is very low (4 %).

Ownership of fans and cell phones is almost universal in all districts however some variation exits across districts in ownership of the some of the assets like refrigerator, radio and motorcycle. For example, ownership of refrigerator is as high as 83 % in Bahawalpur but its ownership is as low as 41 and 42 % in Vehari and Multan respectively. Similarly, among all the districts, ownership of radio is highest in Lodhran from where almost 42 % of respondents reported its ownership but almost none owned any radio in Khanewal.

Table 5.3-7: Household Assets

assets	Vehari	Lodhran	Multan	Muzaffargarh	Bahawalpur	Khanewal	Total
Fan	96.1%	86.4%	98.3%	100.0%	92.5%	95.3%	95.1%
Refrigerator	40.9%	45.7%	42.1%	65.1%	82.8%	51.6%	53.2%
TV with Dish Antenna	21.3%	21.0%	34.7%	14.5%	50.5%	17.2%	26.4%
TV without Dish Antenna/Cable	31.5%	13.6%	31.4%	71.1%	61.3%	35.2%	39.5%
Radio	30.7%	42.0%	5.8%	19.3%	4.3%	.8%	16.0%
Land line phone	3.1%	8.6%	3.3%	1.2%	3.2%	3.9%	3.8%
Cell phone	96.1%	84.0%	92.6%	95.2%	97.8%	96.1%	94.0%
Washing machine	40.2%	51.9%	45.5%	68.7%	79.6%	39.8%	52.1%
Bicycle	50.4%	60.5%	23.1%	80.7%	95.7%	58.6%	58.8%
Motorcycle	70.1%	54.3%	71.1%	73.5%	95.7%	64.8%	71.4%

5.3.10 Respondent & Household Debt

A small proportion (14 %) of farmers reported debt. However, 82 % are in a position to payback this debt. Almost 8 % farmers reported that at least one household member was in debt however 78 % of respondent confident that other members had the ability payback this loan. More than one-third of farmers from Vehari district and 5 % from Muzaffargarh reported debt.

Table 5.3-8: Respondents or household members having debt

Question	Vehari	Lodhran	Multan	Muzaffargarh	Bahawalpur	Khanewal	Total
% have debt	36.2%	9.9%	8.3%	4.8%	8.6%	9.4%	13.9%
Able to make regular repayment	80.4%	100.0%	80.0%	75.0%	100.0%	66.7%	81.8%

Everyone in household able to make regular repayment?	78.3%	37.5%	50.0%	75.0%	87.5%	66.7%	70.5%
Anyone other household member owe a loan (Debt)?	25.2%	2.5%	3.3%	-	2.2%	7.8%	7.9%
Do they make regular repayment?	96.9%	100.0%	100.0%	-	100.0%	0.0%	78.0%

5.3.11 Distribution of Household Expense

Figure 5.3-4 below shows data on average household expenses. On an average, a household has Rs.19,516 monthly expenditures. Household monthly expenses vary substantially across districts. Farmers from Bahawalpur reported monthly expenses as high as Rs. 36,320. Household expenses as reported by farmers from Muzaffargarh are as low as Rs. 7,817 which are about 5 times lower than that of Bahawalpur.

Figure 5.3-4: District wise monthly expenses

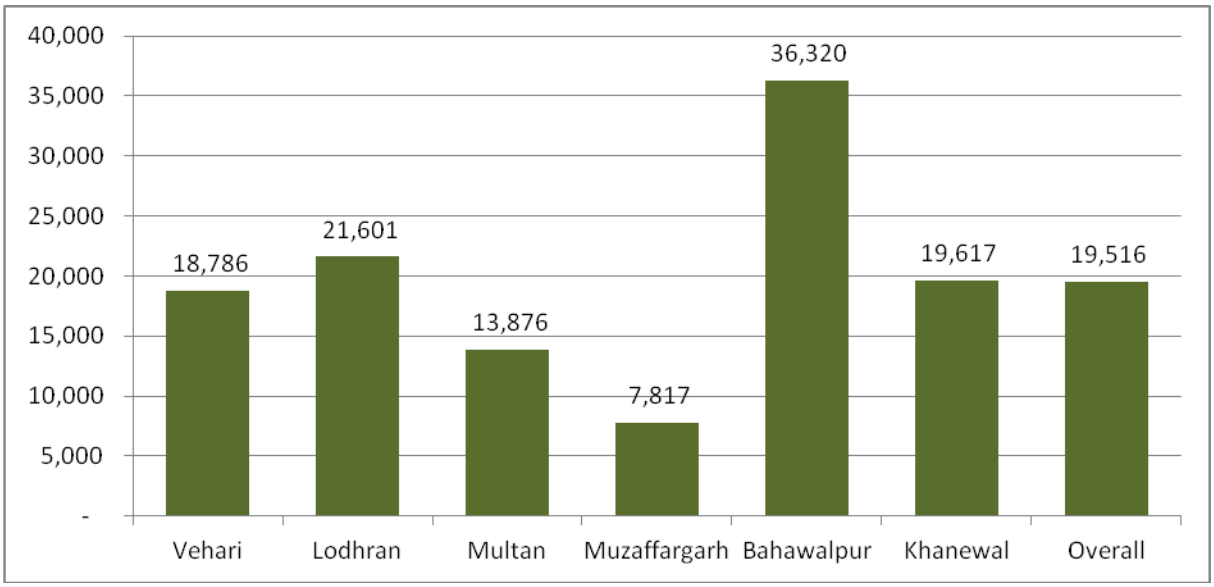


Table 5.3-9 presents percentage of distribution of expenses by item in each district. As expected, the major expense at household level is food items on which almost two-fifths of the expenses incurred, 11% of expenses are on clothing and footwear followed by education (9 %) and health (9 %). Households spend 7% on fuel and electricity, 6 % on transport and 4 % on communication.

There is variation from on district to the other in item wise expenditure e.g. in Multan and Muzaffargarh, households spend 56 % and 47 % respectively on food items whereas expenses on food items in remaining districts almost similar (36 % to 39 %). Health expenses vary across districts, 12% to 13 % of the household expenditures in Lodhran and Khanewal is spent on health whereas this is only 5 % in Multan. Similarly education expenses also vary among districts. Proportion of expenses going to education is the highest in Muzaffargarh (13 %) and the lowest in Multan (6 %). Similar higher proportion of expenses is spent on clothing/footwear in Lodhran, Khanewal and Vehari as compared to other districts.

Water is primarily the expense related to irrigation water through electric /motorized tube wells and tax for water for canal water to irrigation department. The drinking water is free (99.9%) use hand pumps and or tube well water for drinking.

Table 5.3-9: Expenses by item

Item	Vehari	Lodhran	Multan	Muzaffar garh	Bahawal pur	Khanewal	Overall
Food, water	37.0%	38.6%	56.4%	47.0%	35.7%	36.6%	40.0%
Health	8.5%	11.9%	5.2%	6.0%	6.1%	13.0%	8.6%
Education	6.8%	12.6%	5.6%	13.2%	7.6%	11.7%	9.0%
Clothing / footwear	13.1%	14.8%	5.8%	11.2%	7.3%	13.4%	10.7%
Fuel and electricity	5.8%	9.1%	6.6%	9.0%	4.4%	11.5%	7.3%
Transport	8.5%	5.6%	6.9%	8.5%	4.3%	3.7%	5.8%
Communication (phone, etc.)	5.1%	3.5%	3.7%	4.2%	3.2%	5.6%	4.2%
Housing (rent & other costs)	2.3%	0.3%	4.0%	0.9%	1.2%	0.9%	1.6%
Miscellaneous	12.9%	3.6%	5.7%	0.0%	30.2%	3.6%	12.8%
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 5.3-10: Household expenses in PKR

Item	Vehari	Lodhran	Multan	Muzaffar garh	Bahawal pur	Khanewal	Total
Food, water	6,942	8,346	7,832	3,672	12,978	7,182	7,801
Health	1,597	2,562	722	470	2,199	2,551	1,687
Education	1,276	2,728	774	1,030	2,776	2,290	1,761
Clothing / footwear	2,457	3,195	811	878	2,637	2,624	2,089
Fuel and electricity	1,085	1,965	910	705	1,613	2,253	1,429
Transport	1,600	1,200	960	664	1,575	732	1,123
Communication (phone, etc.)	965	753	517	325	1,156	1,105	824
Housing (rent & other costs)	432	74	560	72	419	179	310
Miscellaneous	2,432	778	789	-	10,967	701	2,491
Overall	18,786	21,601	13,876	7,817	36,320	19,617	19,516

5.3.12 Respondent Contribution in Household Income

Table 5.3-11 presents data on respondent's contribution to household income. Data suggests that respondents' contribution to household income from sale of milk is 38 %. Respondents are also contributing a significant portion to household income from agricultural

as well as non-agricultural sources. Respondents reported contributing 62 % from non-agricultural income as well as 43 % from agricultural income.

Respondent's contribution to household income varies across districts and source of income. Respondents in Bahawalpur and Multan contribute about 88 % and 77 % respectively to household income from sale of milk. Similarly 92 % of household income from Agriculture in Bahawalpur comes from respondents.

Table also suggests that household's income from dairy products is negligible.

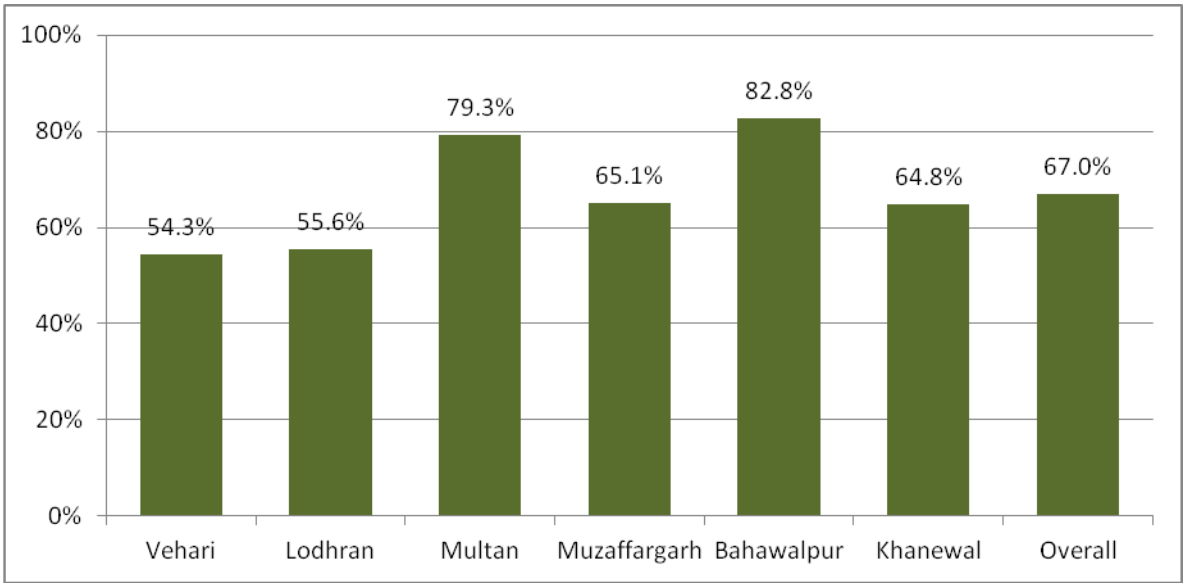
Table 5.3-11: Contribution to Household Income by Source

District	Sale of milk		Agriculture		Non-Agriculture income	
	Income (Rs)	Contribution (%)	Income (Rs)	Contribution (%)	Income (Rs)	Contribution (%)
Vehari	7,224	27.4%	8,032	26.4%	5,047	58.0%
Lodhran	8,438	11.3%	16,914	13.8%	5,173	3.8%
Multan	5,551	53.7%	7,885	34.6%	2,616	56.0%
Muzaffargarh	3,946	77.7%	16,639	40.3%	12,687	82.4%
Bahawalpur	6,552	88.3%	24,290	92.1%	6,387	87.6%
Khanewal	7,618	9.6%	11,846	12.3%	2,285	30.6%
Overall	6,609	37.7%	13,446	42.5%	5,239	61.6%

5.3.13 Household Economic Condition

Regarding perception on economic stability 67 % of the farmers are confident that their households are economically secure. This perception varies among districts and almost 83 % of respondents from Bahawalpur and 79 % from Multan reported that their household were economically secure. On the other hand, 54% and 56 % of farmers from Vehari and Lodhran respectively perceived that their households were economically secure.

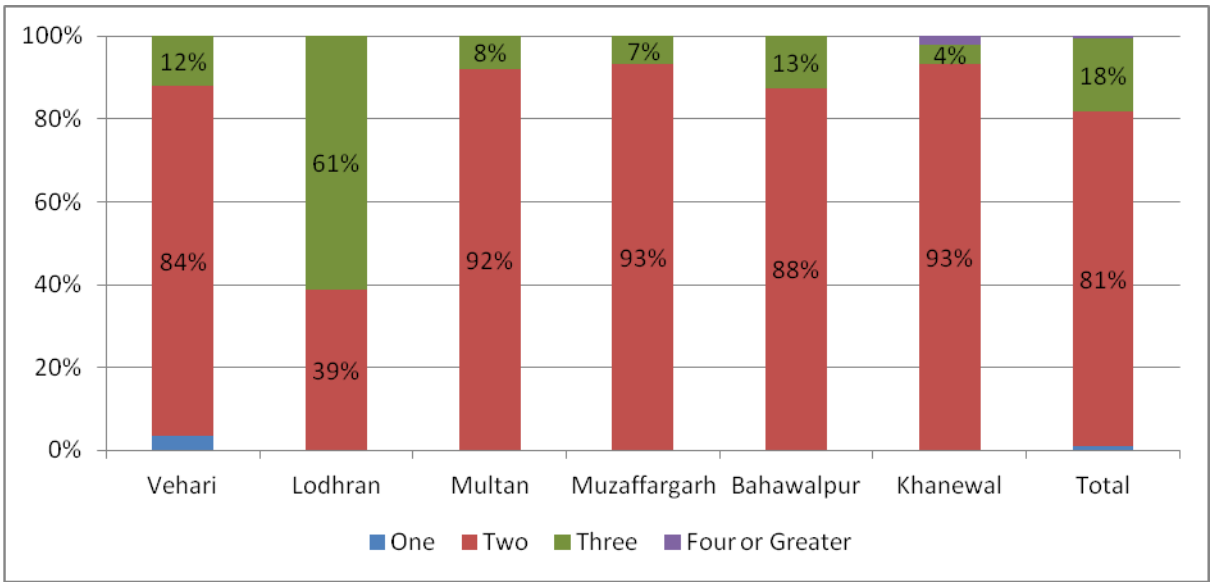
Figure 5.3-5: Perception regarding economic security



5.3.14 Household Nutrition Status

All of the farmers from all districts reported having meals twice a day.

Figure 5.3-6: Food Security



5.3.15 Category of Farmer

Type of farmers covered in the survey is presented in table 5.3-12 below. It shows that 73 % of the farmers are land owners and 12 % each are tenant and landless (Cultivating land on rent). Farmer's types vary substantially across districts. A large majority of the farmers from Bahawalpur (93 %) and Lodhran (90 %) are own cultivators. Tenants and landless farmers are reported more from Vehari (54 %), Muzaffargarh (32 %) and Khanewal (23 %).

Table 5.3-12: Distribution of Farmers by type

Farmer	Vehari	Lodhran	Multan	Muzaffar garh	Bahawal pur	Khanewal	Overall
Landless (on rent)	25.2%	6.2%	9.1%	8.4%	3.2%	15.6%	**12.3%**
Land Owner	44.1%	90.1%	81.8%	61.4%	92.5%	74.2%	**72.7%**
Tenant (employee)	28.3%	3.7%	4.1%	24.1%	3.2%	7.8%	**12.2%**
Others	2.4%	0.0%	5.0%	6.0%	1.1%	2.3%	**2.8%**
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	**100.0%**
N	127	81	121	83	93	128	**633**

5.3.16 Land Ownership

On average, farmers cultivate 5.8 acres of agricultural land. Agricultural landholding size slightly varies across districts. Farmers in Bahawalpur cultivate more land (8.3 acres) as compared to others districts. Farmers in Lodhran, Multan and Khanewal reported smaller landholding size. Overall, more than one third of the cultivated land is used for fodder. Proportion of land used to grow fodder is much higher in Multan as compared to other districts followed by Lodhran. Table 5.3-13 below give the details on land holding and usage.

Table 5.3-13: Ownership of Cultivatable Agricultural Land and Proportion Used for Fodder

District	Cultivatable Agricultural land (Acres)	% used for Fodder
Vehari	6.62	24.7%
Lodhran	5.23	43.8%
Multan	4.95	50.9%
Muzaffargarh	6.75	35.2%
Bahawalpur	8.27	25.5%
Khanewal	4.45	32.4%
Overall	5.84	34.4%

5.3.17 Animals Own By Farmers

Overall, 60 % of the farmers own pure breed (Sahiwal/Cholistan) farm animals, 54 % own local breeds and 25 % own cross bred (European) farm animals.

Ownership of type of farm animals varies among districts e.g. ownership of pure (Sahiwal/Cholistan) animals is much higher in Muzaffargarh (93 %) and Khanewal (85 %) whereas ownership of Desi farm animals is more prevalent in Multan (96 %) and Vehari (84 %). Lodhran has large proportion for all three types i.e. pure (60 %), Local (53 %) and Cross (72 %) of farm animals.

Table 5.3-14: Ownership of livestock by breeds

District	Pure (Sahiwal/Cholistan)	Local (Desi)	Cross (European)
Vehari	51.2%	84.3%	14.2%
Lodhran	60.5%	53.1%	71.6%
Multan	11.6%	95.9%	6.6%
Muzaffargarh	92.8%	59.0%	21.7%
Bahawalpur	73.1%	8.6%	28.0%
Khanewal	85.2%	15.6%	25.0%
Overall	60.3%	54.2%	25.3%

5.3.18 Fodder Used

During summer season, 90 % of the farmers use cultivated fodder for farm animals. The second most commonly used fodder is 'Khal' (62 %) followed by dried fodder (42 %). About one-third farmers use Wanda and 19 % purchase fodder during summer season. Table 5.3-15 gives the breakdown of fodder usage.

District variation exists in use of fodder type during summer. All of the framers from Lodhran, Bahawalpur and Khanewal reported use of cultivated fodder whereas 71 % farmers in Vehari are using it. Use of khal as fodder is also much higher in Bahawalpur (99 %), Khanewal (89 %) and Lodhran (75 %) compared to other districts. Use of Wanda is the highest (83 %) in Lodhran and the lowest (9 %) in Multan.

There is no variation is use of fodder between summer and winter seasons Table 5.3-16 gives details on fodder usage in winter.

Table 5.3-15: Type of fodder usage during summer

Type of Fodder	Vehari	Lodhran	Multan	Muzaffar garh	Bahawal pur	Khanewal	Overall
Cultivated Fodder	70.9%	100.0%	89.3%	84.3%	98.9%	100.0%	89.9%
Collected Fodder	2.4%	34.6%	1.7%	0.0%	0.0%	0.0%	5.2%
Purchased Fodder	33.9%	11.1%	14.0%	44.6%	1.1%	11.7%	19.3%
Grazing	6.3%	3.7%	1.7%	32.5%	2.2%	24.2%	11.5%
Khal	30.7%	75.3%	27.3%	66.3%	98.9%	89.1%	62.2%
Wanda	27.6%	82.7%	9.1%	19.3%	41.9%	25.0%	31.6%
Silahe/Hay	1.6%	2.5%	.8%	0.0%	0.0%	0.0%	.8%
Nutrition Mix	10.2%	0.0%	24.8%	13.3%	0.0%	0.0%	8.5%
Dried Fodder	47.2%	72.8%	8.3%	20.5%	51.6%	57.0%	42.2%
N	127	81	121	83	93	128	**633**

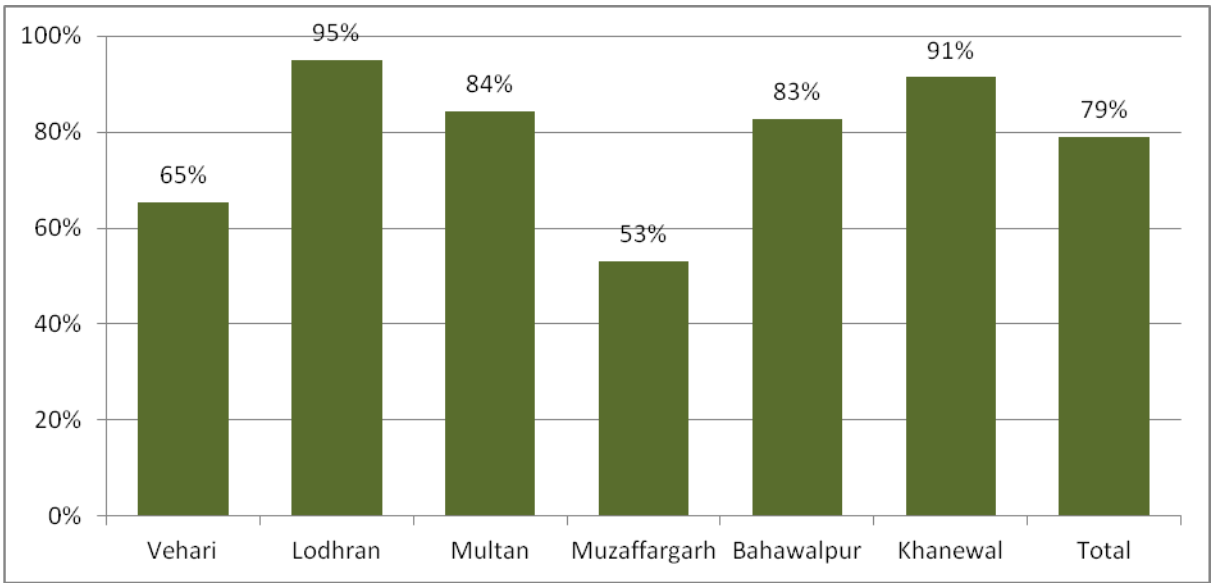
Table 5.3-16: Type of fodder usage during winters

Type of Fodder	Vehari	Lodhran	Multan	Muzaffar garh	Bahawal pur	Khanewal	Overall
Cultivated Fodder	63.8%	98.8%	90.1%	84.3%	100.0%	98.4%	88.3%
Collected Fodder	12.6%	30.9%	3.3%	0.0%	0.0%	0.0%	7.1%
Purchased Fodder	32.3%	19.8%	14.9%	44.6%	1.1%	10.2%	19.9%
Grazing	6.3%	2.5%	.8%	30.1%	0.0%	21.1%	10.0%
Khal	29.1%	71.6%	38.8%	67.5%	98.9%	89.1%	63.8%
Wanda	28.3%	81.5%	14.9%	18.1%	43.0%	24.2%	32.5%
Silahe/Hay	5.5%	2.5%	.8%	0.0%	0.0%	0.0%	1.6%
Nutrition Mix	7.9%	0.0%	19.8%	13.3%	0.0%	.8%	7.3%
Dried Fodder	54.3%	70.4%	12.4%	19.3%	54.8%	57.0%	44.4%
N	127	81	121	83	93	128	**633**

5.3.19 Knowledge of Animal's Nutrition Requirement

Figure5.3-7 presents data on farmers' knowledge of animal's nutrition requirement. Data show that 79 % of the farmers know animals' nutrition requirements. Farmers' knowledge varies across districts. The proportion of farmers who reported knowledge of animals' nutrition requirement is reported from Lodhran followed by Khanewal (91 %). More than half of the farmers from Muzaffargarh reported knowledge of animals' nutrition requirement.

Figure 5.3-7: Knowledge on animal nutrition



5.3.20 Facilities Available for Basic health/ Vaccination of Farm Animals

The basic health/vaccination service providers for farm animals available to farmers are local trained person (44 %) and farmers themselves (31 %). Proper basic health/vaccination services are only available to 7 % of the farmers.

Availability of basic health and vaccination services for farm animals varies from one district to the other. Local trained person is available to a large majority (94 %) of farmers in Bahawalpur, 71 % in Muzaffargarh. In Lodhran, 70 % of the farmers reported themselves as providers of basic health service to farm animals. Use of veterinary hospital is reported by 12 % each from Vehari and Multan.

Table 5.3-17: Availability of service providers for basic health/ vaccination of farm animals

Facility	Vehari	Lodhran	Multan	Muzaffar garh	Bahawal pur	Khanewal	Overall
Self	27.6%	70.4%	13.2%	21.7%	1.1%	53.1%	30.8%
Local trained Person	44.1%	0.0%	38.0%	71.1%	93.5%	24.2%	44.1%
Local dispensary	15.7%	7.4%	18.2%	4.8%	1.1%	0.8%	8.5%
Veterinary Hospital	11.8%	1.2%	12.4%	1.2%	4.3%	3.9%	6.5%
Any Other	0.8%	21.0%	18.2%	1.2%	0.0%	18.0%	10.1%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
N	127	81	121	83	93	128	**633**

5.3.21 Approach Used For Breeding Farm Animals

Farmers reported use of natural mating (55 %) and artificial insemination (45 %) for the breading of farm animals. None of the farmers reported use of embryo transfer for breeding. The use of natural mating is much more prevalent in Multan (82 %) and Muzaffargarh (74 %). Farmers in Bahawalpur (60 %) and Khanewal (67 %) are predominantly using artificial insemination.

Table 5.3-18: Approach adopted for breeding of farm animals

Breeding Approach	Vehari	Lodhran	Multan	Muzaffar garh	Bahawal pur	Khanewal	Overall
Natural Matting	52.0%	54.3%	81.8%	73.5%	39.8%	32.8%	**55.1%**
Artificial Insemination	48.0%	45.7%	18.2%	26.5%	60.2%	67.2%	**44.9%**
Embryo Transfer	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	**0.0%**
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
N	127	81	121	83	93	128	**633**

5.3.22 Availability of AI Services

The main artificial insemination service provider available to framers in their area is AI technician who is accessed by 58 % of the farmers. The other AI service providers available in the area and accessed by farmers are veterinary hospital (17 %), AI clinic (11 %) and AI center (10 %).

Availability of AI service providers varies across districts. More than 90 % of the farmers from Muzaffargarh, Bahawalpur and Khanewal mentioned AI technician are available in their area. Farmers in Lodhran reported AI center (49 %) and AI technician (37 %). Farmers in Vehari are mostly rely on veterinary hospitals.

It may be noted that the geographical spread of trained AI services is very thin- There are over 8 million farming families with over 50 million animal heads in Pakistan (and 67% of all of this in Punjab). Thus even though farmers do possess basic knowledge for breeding and availability of AI services but quality AI services and proper breeding by "book log" and breed results records for selection of semen etc. is still a farfetched reality.

Table 5.3-19: Availability of Artificial Insemination Services

AI service providers	Vehari	Lodhran	Multan	Muzaffar garh	Bahawal pur	Khanewal	Overall
AI Center	11.0%	49.4%	1.7%	1.2%	3.2%	0.8%	**9.6%**
AI Clinic	17.3%	8.6%	28.1%	2.4%	3.2%	0.0%	**10.7%**
Veterinary Hospital	33.1%	8.6%	24.0%	24.1%	3.2%	3.9%	**16.7%**
AI Technician	19.7%	37.0%	29.8%	90.4%	91.4%	92.2%	**58.3%**
No Response	26.0%	0.0%	21.5%	0.0%	1.1%	7.0%	**10.9%**
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
N	127	81	121	83	93	128	**633**

5.3.23 Satisfaction with the Animal Health Services

Farmers were asked about their satisfaction level with the animal health services, 59 % were 'somewhat satisfied' and only 9 % were very satisfied. Almost one in three farmers were not satisfied with the animal health services available in their area.

Table 5.3-20: Level of satisfaction with animal health services

Satisfaction level	Vehari	Lodhran	Multan	Muzaffar garh	Bahawal pur	Khanewal	Overall
Not at all satisfied	19.7%	11.1%	9.1%	21.7%	0.0%	1.6%	**10.3%**
Not very satisfied	4.7%	37.0%	13.2%	26.5%	37.6%	18.8%	**21.0%**
Somewhat satisfied	67.7%	49.4%	47.9%	42.2%	59.1%	79.7%	**59.4%**
Very satisfied	7.1%	2.5%	29.8%	9.6%	2.2%	0.0%	**9.0%**
Extremely Satisfied	.8%	0.0%	0.0%	0.0%	1.1%	0.0%	**.3%**
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
N	127	81	121	83	93	128	**633**

5.3.24 Satisfaction with Services of Breeding Farm Animals

Farmers seem more satisfied with breeding services than basic health services in their area. Three in four farmers expressed some level of satisfaction with the breeding of animal services. However, 24 % of farmers expressed their dissatisfaction with the breeding services available in the area.

Level of satisfaction with breeding services differs among districts e.g. 32% farmers from Multan and 25 % of the farmers from Muzaffargarh are very satisfied with the breeding services available in the area.

Table 5.3-21: Level of satisfaction with breeding Services

Satisfaction level	Vehari	Lodhran	Multan	Muzaffar garh	Bahawal pur	Khanewal	Overall
Not at all satisfied	19.2%	8.6%	9.1%	6.0%	0.0%	3.1%	**8.1%**
Net very satisfied	4.0%	38.3%	11.6%	16.9%	15.1%	15.6%	**15.5%**
Somewhat satisfied	72.0%	50.6%	47.1%	51.8%	79.6%	81.3%	**64.8%**
Very satisfied	4.8%	2.5%	32.2%	25.3%	5.4%	0.0%	**11.6%**
Extremely Satisfied	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	**0.0%**
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
N	127	81	121	83	93	128	**633**

5.3.25 Knowledge of Farm Practices

Farmers' knowledge about vaccination, natural matting and de-worming quite high. A large majority of farmers also reported knowledge of Vanda feeding and artificial insemination (using local as well as imported semen).

Table 5.3-22: Knowledge of farm practices

Farm practices	Vehari	Lodh ran	Multan	Muzaffa r garh	Bahawal pur	Khane wal	Over all
De-worming	88.0%	97.5%	86.8%	77.1%	97.8%	87.5%	88.9%
Vaccination	89.6%	100.0%	96.7%	73.5%	100.0%	99.2%	93.7%
Silage Making	67.2%	74.1%	12.4%	6.0%	3.2%	57.8%	38.2%
Free Water Access to Animals	74.4%	79.0%	50.4%	19.3%	53.8%	93.8%	64.0%
Shed Improvement (fencing, model Construction	68.8%	65.4%	9.9%	20.5%	3.2%	71.1%	41.5%
Vanda feeding to animals	84.0%	96.3%	66.9%	41.0%	90.3%	96.1%	80.0%
Teat dipping	40.8%	54.3%	10.7%	9.6%	5.4%	58.6%	31.1%
Natural Matting	92.8%	93.8%	89.3%	96.4%	97.8%	89.8%	92.9%
Artificial Insemination using Imported Semen	83.2%	92.6%	47.1%	42.2%	58.1%	97.7%	71.3%
Artificial Insemination using Local Semen	86.4%	84.0%	55.4%	81.9%	71.0%	96.1%	79.2%
Data recording of farm animals	87.2%	64.2%	6.6%	36.1%	4.3%	58.6%	44.1%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
N	127	81	121	83	93	128	**633**

A total of 81% farmers are de-worming, 84% are vaccinating their animals as farm practices. About 58 % of farmers are using both artificial insemination and feeding vanda to farm animals.

Farm practices vary from across districts. Almost all farmers from Bahawalpur and Lodhran are de-worming and vaccinating their farm animals but only 53 to 55 % of the farmers from Vehari de-worming and vaccinating animals. Vanda feeding is almost wide spread in Lodhran but it is used by only 27 % of the farmers Muzaffargarh. Artificial insemination using

imported semen is used by every farmer in Khanewal but it is reported by only 27 % of the farmers from Muzaffargarh.

Table 5.3-23: Use of farm practices

Farm practices	Vehari	Lodhran	Multan	Muzaffar garh	Bahawalpur	Khanewal	Over all
De-worming	55.2%	100.0%	80.2%	72.3%	97.8%	85.9%	80.5%
Vaccination	52.8%	100.0%	96.7%	59.0%	100.0%	97.7%	84.2%
Silage Making	27.2%	25.9%	29.8%	0.0%	2.2%	3.1%	15.4%
Free Water Access to Animals	49.6%	66.7%	76.9%	4.8%	54.8%	25.8%	47.1%
Shed Improvement (fencing, model Construction	30.4%	37.0%	38.8%	12.0%	3.2%	6.3%	21.6%
Vanda feeding to animals	56.8%	95.1%	53.7%	26.5%	89.2%	36.7%	57.8%
Teat dipping	48.0%	49.4%	33.9%	4.8%	3.2%	55.5%	34.7%
Natural Matting	82.4%	81.5%	79.3%	94.0%	97.8%	35.9%	76.1%
Artificial Insemination using Imported Semen	45.6%	69.1%	46.3%	26.5%	58.1%	97.7%	58.6%
Artificial Insemination using Local Semen	47.2%	87.7%	57.0%	56.6%	69.9%	43.0%	58.0%
Data recording of farm animals	72.0%	66.7%	38.0%	28.9%	4.3%	10.9%	36.8%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
N	127	81	121	83	93	128	**633**

5.3.26 Satisfaction Level of Farm Practices

Farmers were asked about reason for using or not using different best farm practices. The most important reason mentioned for all type of farm practices is that these practices are too expensive. The second most important reason is that 'not enough information' is available about these farm practices. Few farmers also mentioned that they did not have enough time to use these farm practices. Table 5.3-24 below gives reasons for not using these best practices.

Table 5.3-24: Satisfaction level with Farm practices

Farm practices	Satisfied with traditional methods	Too Costly	Small Land to implement	Not enough time	Not enough resources	Not enough information	Satisfied with traditional methods
De-worming	13.8%	49.6%	0.0%	7.3%	.8%	28.5%	13.8%
Vaccination	11.0%	35.0%	0.0%	14.0%	1.0%	39.0%	11.0%
Silage Making	1.9%	50.6%	0.0%	2.1%	21.2%	24.3%	1.9%
Free Water Access to Animals	9.3%	31.0%	.6%	3.0%	17.9%	38.2%	9.3%
Shed Improvement (fencing, model Construction	4.6%	47.2%	.2%	2.0%	22.6%	23.4%	4.6%
Vanda feeding to animals	3.7%	52.8%	.4%	3.0%	8.2%	31.8%	3.7%
Teat dipping	6.3%	25.4%	0.0%	6.8%	21.8%	39.7%	6.3%
Natural Matting	3.3%	63.4%	.7%	23.5%	2.0%	7.2%	3.3%

Artificial Insemination using Imported Semen	4.6%	51.0%	0.0%	2.3%	14.9%	27.2%	4.6%
Artificial Insemination using Local Semen	4.9%	64.9%	0.0%	1.5%	10.6%	18.1%	4.9%
Data recording of farm animals	3.8%	31.1%	0.0%	27.3%	3.0%	34.8%	3.8%

6. Annexures

Annexure 1: Terms of Reference

Annexure 2: Questionnaire for baseline survey